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THE

AMERICAN EPHEMERIS

AND

NAUTICAL ALMANAC,

FOR THE YEAR

1871.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF THE NAVY

BUREAU OF NAVIGATION
WASHINGTON.
1869.

CORRECTIONS.

EPHEMERIS FOR 1871.

Page	20, Feb. 19,	R. Ascension,	*for* 9^m	*read* 10^m.
	21, " 19,	"	" 9^m	" 10^m.
	111, July 24,	Sid. Time,	" $3^s.31$	" $4^s.31$.
	112, " 26,	λ,	" $24''.1$	" $34''.1$.
	150, Sept. 2, 7^h,	Diff. R. A.,	" $1^s.9416$	" $1^s.94.66$.
	192, Nov. 28, 3^h,	Diff. Dec.	" $4''.344$	" $4''.334$.
	221, line 3 from bottom,		" Aug. 26	" Aug. 16.
	230, Jan. 4,	R. Ascension,	" 6^h	" 5^h.
	237, April 10,	"	" 15^h	" 18^h.
	400, Nov., 20.5,	Z',	dele ;	
	497, line 14,		*for* subtracted	" added.
	499, line 3 from bottom,		" Nov. 22	" Nov. 18.

PREFACE.

THE preparation of the *American Ephemeris and Nautical Almanac* was begun in the latter part of the year 1849, in accordance with an act of Congress, approved on the 3d of March of that year. An account of this preparation and the values of the constants adopted will be found in the Preface and Appendix of the first volume, for the year 1855.

In the volume for 1865 the star ephemeris was greatly enlarged; new places of the stars adopted; the form for Moon Culminations and moon-culminating stars changed so that less space was required; mean solar time, instead of sidereal time, used in the dates of the ephemeris for the meridian of Washington; BESSEL'S notation in the formulæ for star-reductions substituted for BAILY'S; and several other changes of less importance were made.

In the volume for 1869 some slight changes were made in the ephemerides of Venus and Mars, and in the arrangement of the stars; and the explanations of the arrangement and use of the tables were revised so as to adapt them to the wants of operators at sea or in the field.

In the volume for 1870 the ephemeris of Neptune is derived from NEWCOMB'S tables; the ephemerides of the outer planets are given for Washington mean noon instead of sidereal 0^h; and hourly differences, instead of the logarithms, for interpolation; new places adopted for the standard stars; some changes made in the pages of occultations; and the table of positions of Observatories revised.

The Appendix contains the new places adopted for the standard stars, and the reduction to them of the places given in the volumes for 1865 to 1869.

A list of occultations visible in 1870–1871 in the territory of the United States west of the Mississippi river, will be published in separate pamphlets.

A table of *Logarithms of small arcs in space and time* is again appended. It is much more general in its applications and more convenient than the table of *Proportional Logarithms*, which is usually found in works on Navigation.

J. H. C. COFFIN,
Prof. Math. U. S. Navy, Superintendent.

WASHINGTON, *April* 1, 1869.

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CORRECTIONS.

EPHEMERIS FOR 1870. *First Edition.*

Page 282, Dec. 35,	δ Persei, Diff. of Dec.,	*for* —	*read* +
291, " 5—25,	ι Ursæ Majoris, R. A.,	" 27^s	" 21^s.
" " 35,	" "	" 28^s	" 22^s.
330, Sept. 1,	Equation of time,	" +	" —
358—363,	Heading,	" 1^h of Long.	" 1^h of mean time.
359, April 24,	R. A. at Transit,	" 16^s	" 26^s.
" " 25,	" "	" 26^s	" 16^s.
380, Oct. 32,	Time of Transit,	" $19^m.0$	" $9^m.0$.
390, Jan. 13.5,	Z',	dele ;	
398, Sept. 14.0,	λ,	*for* 58′	" 38′.
399, Oct. 17.5,	λ,	" 57′	" 37′.
408, Uranus,	Column of Z,	" — 9	" — 0.
495, Long. of Clinton,		" 359°	" 358°.
503, line 5 from bottom,		" Feb. 24	" Sept. 1.
510, line 9,		" (3)	" (2)
" line 24,	*Angle from N. point,*	" 93°	" — 93°.
515, line 19,	*Angle from Vertex,*	" + 29°	" — 29°.

To R. A. and Dec. of Mars *for transit at Washington*, 1870, *pages* 358 *to* 363.

1870.	$\Delta\alpha$	$\Delta\delta$	1870.	$\Delta\alpha$	$\Delta\delta$	1870.	$\Delta\alpha$	$\Delta\delta$
	s	″		s	″		s	″
April 27	—0.01	+0.2	Oct. 5	+0.09	+0.6	Nov. 26	+0.17	—0.7
May 13	.01	0.4	21	.09	0.4	30	.17	0.8
29	.01	0.5	25	.09	0.3	Dec. 4	.18	1.0
June 14	—0.01	0.8	29	.10	+0.1	8	.20	1.2
30	.00	0.9	Nov. 2	.10	0.0	12	.22	1.3
July 16	+0.02	1.1	6	.11	—0.1	16	.24	1.6
Aug. 1	.04	1.1	10	.12	0.1	20	.27	1.8
17	.05	1.2	14	.13	0.2	24	.29	2.1
Sept. 3	.07	1.0	18	.14	0.4	28	.32	2.3
19	+0.08	+0.9	22	+0.15	—0.6	32	+0.36	—2.6

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1871, WHICH COMPRISES THE LATTER PART OF THE 95TH AND THE BEGINNING OF THE 96TH YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO—

The year 6584 of the Julian Period;
" 7379–80 of the Byzantine era;
" 5631–32 of the Jewish era;
" 2624 since the foundation of Rome, according to Varro;
" 2618 since the beginning of the era of Nabonassar, which has been assigned to Wednesday, the 26th of February, of the 3967th year of the Julian Period, corresponding according to the chronologists to the 747th, and according to the astronomers to the 746th year before the birth of Christ.
" 2647 of the Olympiads, or the third year of the 662d Olympiad, commencing in July, 1871, if we fix the era of the Olympiads at 775½ years before Christ, or near the beginning of July of the year 3938 of the Julian Period;
" 2183 of the Grecian era, or the era of the Seleucidæ;
" 1587 of the era of Diocletian.

The year 1288 of the Mohammedan era, or the era of the Hegira, begins on the 23d of March, 1871.

The first day of January of the year 1871 is the 2,404,429th day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letter	A	Solar Cycle	4
Epact	9	Roman Indiction	14
Lunar Cycle or Golden Number	10	Julian Period	6584

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, &c.

☉	The Sun.	♂	Mars.
☾	The Moon.	♃	Jupiter.
☿	Mercury.	♄	Saturn.
♀	Venus.	♅	Uranus.
⊕ or ♁	The Earth.	♆	Neptune.

SIGNS OF THE ZODIAC.

Spring signs.	1.	♈	Aries.	Autumn signs.	7.	♎	Libra.
	2.	♉	Taurus.		8.	♏	Scorpio.
	3.	♊	Gemini.		9.	♐	Sagittarius.
Summer signs.	4.	♋	Cancer.	Winter signs.	10.	♑	Capricornus.
	5.	♌	Leo.		11.	♒	Aquarius.
	6.	♍	Virgo.		12.	♓	Pisces.

ASPECTS.

☌ Conjunction, or having the same Longitude or Right Ascension.
□ Quadrature, or differing 90° in " " "
☍ Opposition, or differing 180° in " " "

ABBREVIATIONS.

☊	Ascending Node.	′	Minutes of Arc.
☋	Descending Node.	″	Seconds of Arc.
N.	North. S. South.	^{h}	Hours.
E.	East. W. West.	^{m}	Minutes of Time.
°	Degrees.	^{s}	Seconds of Time.

ASTRONOMICAL EPHEMERIS

FOR THE USE OF

NAVIGATORS.

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semidiameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sun.	1	18 46 32.33	11.042	S. 23 1 27.4	+12.29	16 18.39	71.09	3 44.73	1.182
Mon.	2	18 50 57.16	11.027	22 56 19.0	13.43	16 18.39	71.04	4 12.92	1.167
Tues.	3	18 55 21.63	11.011	22 50 43.2	14.57	16 18.39	70.99	4 40.74	1.151
Wed.	4	18 59 45.69	10.993	22 44 40.1	15.70	16 18.38	70.94	5 8.17	1.134
Thur.	5	19 4 9.33	10.975	22 38 9.9	16.83	16 18.37	70.88	5 35.18	1.116
Frid.	6	19 8 32.51	10.956	22 31 12.9	17.95	16 18.35	70.82	6 1.73	1.097
Sat.	7	19 12 55.23	10.936	22 23 49.3	19.05	16 18.32	70.75	6 27.81	1.077
Sun.	8	19 17 17.46	10.916	22 15 59.2	20.14	16 18.29	70.68	6 53.42	1.057
Mon.	9	19 21 39.18	10.894	22 7 42.7	21.23	16 18.24	70.61	7 18.52	1.035
Tues.	10	19 26 0.36	10.871	21 59 0.2	22.30	16 18.19	70.54	7 43.07	1.012
Wed.	11	19 30 20.98	10.847	21 49 52.2	23.37	16 18.14	70.46	8 7.06	0.988
Thur.	12	19 34 41.02	10.823	21 40 18.8	24.42	16 18.08	70.38	8 30.49	0.964
Frid.	13	19 39 0.47	10.798	21 30 20.2	25.46	16 18.01	70.30	8 53.32	0.939
Sat.	14	19 43 19.29	10.772	21 19 56.6	26.51	16 17.94	70.21	9 15.52	0.913
Sun.	15	19 47 37.48	10.745	21 9 8.3	27.53	16 17.88	70.12	9 37.09	0.886
Mon.	16	19 51 55.03	10.716	20 57 55.6	28.53	16 17.80	70.02	9 58.03	0.858
Tues.	17	19 56 11.88	10.687	20 46 18.9	29.52	16 17.72	69.92	10 18.27	0.829
Wed.	18	20 0 28.03	10.658	20 34 18.7	30.50	16 17.63	69.82	10 37.81	0.800
Thur.	19	20 4 43.47	10.629	20 21 55.1	31.47	16 17.54	69.72	10 56.64	0.771
Frid.	20	20 8 58.17	10.598	20 9 8.3	32.42	16 17.44	69.62	11 14.74	0.740
Sat.	21	20 13 12.11	10.566	19 55 58.9	33.35	16 17.34	69.52	11 32.08	0.708
Sun.	22	20 17 25.29	10.534	19 42 27.2	34.28	16 17.24	69.41	11 48.66	0.676
Mon.	23	20 21 37.70	10.501	19 28 33.5	35.18	16 17.13	69.30	12 4.47	0.643
Tues.	24	20 25 49.30	10.467	19 14 18.4	36.07	16 17.03	69.19	12 19.48	0.610
Wed.	25	20 30 0.10	10.433	18 59 42.1	36.94	16 16.92	69.08	12 33.68	0.576
Thur.	26	20 34 10.07	10.398	18 44 45.0	37.80	16 16.80	68.97	12 47.06	0.541
Frid.	27	20 38 19.21	10.363	18 29 27.3	38.65	16 16.68	68.86	12 59.61	0.506
Sat.	28	20 42 27.52	10.328	18 13 49.3	39.48	16 16.56	68.75	13 11.33	0.471
Sun.	29	20 46 34.98	10.293	17 57 52.3	40.29	16 16.43	68.63	13 22.20	0.436
Mon.	30	20 50 41.60	10.258	17 41 35.9	41.08	16 16.30	68.51	13 32.24	0.401
Tues.	31	20 54 47.38	10.223	17 25 0.6	41.86	16 16.16	68.40	13 41.44	0.366
Wed.	32	20 58 52.33	10.189	S. 17 8 7.0	+42.62	16 16.02	68.28	13 49.81	0.332

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subt'd from Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Sun.	1	18 46 31.63	11.038	S. 23 1 28.2	+12.28	3 44.65	1.182	18 42 46.98
Mon.	2	18 50 56.37	11.023	22 56 20.0	13.42	4 12.83	1.167	18 46 43.54
Tues.	3	18 55 20.75	11.007	22 50 44.4	14.56	4 40.65	1.151	18 50 40.10
Wed.	4	18 59 44.73	10.990	22 44 41.5	15.69	5 8.07	1.134	18 54 36.66
Thur.	5	19 4 8.29	10.972	22 38 11.5	16.82	5 35.08	1.116	18 58 33.21
Frid.	6	19 8 31.39	10.953	22 31 14.8	17.94	6 1.62	1.097	19 2 29.77
Sat.	7	19 12 54.03	10.933	22 23 51.4	19.04	6 27.70	1.077	19 6 26.33
Sun.	8	19 17 16.19	10.913	22 16 1.5	20.13	6 53.30	1.057	19 10 22.89
Mon.	9	19 21 37.84	10.891	22 7 45.3	21.22	7 18.40	1.035	19 14 19.44
Tues.	10	19 25 58.94	10.868	21 59 3.2	22.29	7 42.94	1.012	19 18 16.00
Wed.	11	19 30 19.49	10.844	21 49 55.5	23.36	8 6.93	0.988	19 22 12.56
Thur.	12	19 34 39.47	10.820	21 40 22.4	24.41	8 30.35	0.964	19 26 9.12
Frid.	13	19 38 58.85	10.795	21 30 24.0	25.45	8 53.18	0.939	19 30 5.67
Sat.	14	19 43 17.61	10.769	21 20 0.7	26.49	9 15.38	0.913	19 34 2.23
Sun.	15	19 47 35.74	10.742	21 9 12.8	27.51	9 36.95	0.886	19 37 58.79
Mon.	16	19 51 53.23	10.714	20 58 0.3	28.51	9 57.89	0.858	19 41 55.34
Tues.	17	19 56 10.03	10.685	20 46 24.1	29.50	10 18.13	0.829	19 45 51.90
Wed.	18	20 0 26.13	10.656	20 34 24.3	30.48	10 37.67	0.800	19 49 48.46
Thur.	19	20 4 41.52	10.627	20 22 0.9	31.45	10 56.50	0.771	19 53 45.02
Frid.	20	20 8 56.17	10.596	20 9 14.5	32.40	11 14.60	0.740	19 57 41.57
Sat.	21	20 13 10.07	10.564	19 56 5.4	33.34	11 31.94	0.708	20 1 38.13
Sun.	22	20 17 23.21	10.532	19 42 34.0	34.27	11 48.52	0.676	20 5 34.69
Mon.	23	20 21 35.58	10.499	19 28 40.6	35.17	12 4.34	0.643	20 9 31.24
Tues.	24	20 25 47.15	10.466	19 14 25.8	36.06	12 19.35	0.610	20 13 27.80
Wed.	25	20 29 57.91	10.432	18 59 49.9	36.93	12 33.56	0.576	20 17 24.35
Thur.	26	20 34 7.85	10.397	18 44 53.1	37.79	12 46.94	0.541	20 21 20.91
Frid.	27	20 38 16.96	10.362	18 29 35.7	38.64	12 59.49	0.506	20 25 17.47
Sat.	28	20 42 25.24	10.327	18 13 58.2	39.47	13 11.22	0.471	20 29 14.02
Sun.	29	20 46 32.68	10.292	17 58 1.3	40.28	13 22.10	0.436	20 33 10.58
Mon.	30	20 50 39.28	10.257	17 41 45.2	41.07	13 32.15	0.401	20 37 7.13
Tues.	31	20 54 45.04	10.222	17 25 10.2	41.85	13 41.35	0.366	20 41 3.69
Wed.	32	20 58 49.97	10.188	S. 17 8 16.8	+42.61	13 49.73	0.332	20 45 0.24
Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.								Diff. for 1 hour +9ˢ.8565

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h .
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	1	280 41 58.0	42 14.5	152.88	−0.41	9.9926616	− 1.1	5 16 21.05
2	2	281 43 7.0	43 23.3	152.87	0.33	.9926603	0.0	5 12 25.14
3	3	282 44 15.7	44 31.8	152.86	0.23	.9926617	+ 1.1	5 8 29.23
4	4	283 45 24.2	45 40.1	152.85	−0.12	.9926658	2.3	5 4 33.32
5	5	284 46 32.4	46 48.2	152.84	0.00	.9926728	3.5	5 0 37.40
6	6	285 47 40.3	47 55.9	152.83	+0.13	.9926827	4.7	4 56 41.49
7	7	286 48 48.0	49 3.4	152.82	0.26	.9926954	5.8	4 52 45.58
8	8	287 49 55.6	50 10.8	152.81	0.37	.9927109	7.0	4 48 49.67
9	9	288 51 3.0	51 18.1	152.81	0.47	.9927292	8.1	4 44 53.76
10	10	289 52 10.3	52 25.2	152.80	0.55	.9927503	9.3	4 40 57.85
11	11	290 53 17.4	53 32.2	152.80	0.60	.9927740	10.4	4 37 1.94
12	12	291 54 24.4	54 39.0	152.79	0.62	.9928003	11.5	4 33 6.03
13	13	292 55 31.3	55 45.7	152.78	0.62	.9928290	12.4	4 29 10.11
14	14	293 56 38.1	56 52.3	152.77	0.59	.9928599	13.3	4 25 14.20
15	15	294 57 44.7	57 58.7	152.76	0.53	.9928930	14.2	4 21 18.29
16	16	295 58 50.9	59 4.8	152.75	0.44	.9929281	15.0	4 17 22.38
17	17	296 59 56.8	60 10.5	152.74	0.34	.9929651	15.7	4 13 26.46
18	18	298 1 2.4	1 15.9	152.72	0.21	.9930037	16.4	4 9 30.55
19	19	299 2 7.5	2 20.9	152.70	+0.07	.9930439	17.1	4 5 34.64
20	20	300 3 12.1	3 25.3	152.67	−0.06	.9930858	17.8	4 1 38.73
21	21	301 4 16.0	4 29.1	152.64	0.19	.9931292	18.4	3 57 42.82
22	22	302 5 19.2	5 32.1	152.61	0.32	.9931741	19.0	3 53 46.91
23	23	303 6 21.5	6 34.2	152.57	0.42	.9932205	19.6	3 49 51.00
24	24	304 7 22.8	7 35.4	152.53	0.50	.9932685	20.3	3 45 55.09
25	25	305 8 23.1	8 35.6	152.49	0.55	.9933182	21.0	3 41 59.18
26	26	306 9 22.3	9 34.6	152.44	0.56	.9933695	21.7	3 38 3.27
27	27	307 10 20.3	10 32.4	152.39	0.54	.9934224	22.4	3 34 7.36
28	28	308 11 17.0	11 29.0	152.33	0.50	.9934771	23.4	3 30 11.45
29	29	309 12 12.4	12 24.3	152.28	0.43	.9935338	24.0	3 26 15.53
30	30	310 13 6.5	13 18.3	152.22	0.34	.9935925	24.9	3 22 19.62
31	31	311 13 59.3	14 10.9	152.17	0.23	.9936535	25.9	3 18 23.71
32	32	312 14 50.7	15 2.1	152.11	−0.10	9.9937168	+26.9	3 14 27.80

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour $-9^{s}.8296$

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 46.6	14 46.1	54 7.2	−0.25	54 5.3	−0.07	8 13.2	1.78	10.0
2	14 46.2	14 46.8	54 5.6	+0.11	54 7.9	+0.27	8 56.9	1.86	11.0
3	14 48.0	14 49.6	54 12.2	0.43	54 18.1	0.56	9 42.7	1.96	12.0
4	14 51.6	14 54.0	54 25.6	0.68	54 34.4	0.79	10 30.7	2.05	13.0
5	14 56.8	14 59.8	54 44.4	0.88	54 55.5	0.95	11 20.8	2.13	14.0
6	15 3.0	15 6.4	55 7.3	1.02	55 19.9	1.07	12 12.4	2.17	15.0
7	15 10.0	15 13.7	55 33.0	1.11	55 46.5	1.14	13 4.4	2.16	16.0
8	15 17.4	15 21.3	56 0.4	1.17	56 14.6	1.19	13 55.9	2.13	17.0
9	15 25.2	15 29.2	56 29.0	1.21	56 43.6	1.22	14 46.4	2.07	18.0
10	15 33.2	15 37.3	56 58.3	1.23	57 13.2	1.24	15 35.6	2.02	19.0
11	15 41.3	15 45.5	57 28.2	1.25	57 43.3	1.26	16 23.8	2.00	20.0
12	15 49.6	15 53.7	57 58.4	1.26	58 13.5	1.26	17 11.7	2.01	21.0
13	15 57.8	16 1.8	58 28.6	1.24	58 43.4	1.22	18 0.3	2.05	22.0
14	16 5.7	16 9.5	58 57.7	1.17	59 11.4	1.11	18 50.6	2.15	23.0
15	16 12.9	16 16.1	59 24.2	1.02	59 35.7	0.89	19 43.7	2.28	24.0
16	16 18.8	16 20.9	59 45.6	0.75	59 53.5	0.57	20 40.0	2.42	25.0
17	16 22.4	16 23.2	59 59.1	+0.36	60 2.1	+0.13	21 39.4	2.53	26.0
18	16 23.3	16 22.3	60 2.1	−0.12	59 59.1	−0.39	22 40.9	2.58	27.0
19	16 20.7	16 18.2	59 52.9	0.65	59 43.4	0.92	23 42.3	2.53	28.0
20	16 14.8	16 10.6	59 30.9	1.17	59 15.5	1.40	☌		29.0
21	16 5.7	16 0.2	58 57.5	1.60	58 37.3	1.76	0 41.6	2.40	0.5
22	15 54.2	15 47.8	58 15.3	1.89	57 52.1	1.97	1 37.2	2.23	1.5
23	15 41.3	15 34.7	57 28.1	2.01	57 3.9	2.01	2 28.7	2.06	2.5
24	15 28.2	15 21.9	56 40.0	1.97	56 16.8	1.89	3 16.4	1.92	3.5
25	15 15.9	15 10.3	55 54.8	1.78	55 34.3	1.63	4 1.2	1.82	4.5
26	15 5.3	15 0.8	55 15.7	1.47	54 59.1	1.28	4 44.2	1.76	5.5
27	14 56.9	14 53.7	54 44.9	1.09	54 33.1	0.88	5 26.3	1.75	6.5
28	14 51.2	14 49.4	54 23.8	0.66	54 17.2	0.44	6 8.4	1.77	7.5
29	14 48.3	14 47.9	54 13.3	−0.22	54 12.0	−0.00	6 51.6	1.83	8.5
30	14 48.3	14 49.3	54 13.2	+0.21	54 16.9	+0.41	7 36.4	1.91	9.5
31	14 50.9	14 53.2	54 23.0	0.60	54 31.3	0.77	8 23.3	2.01	10.5
32	14 56.0	14 59.3	54 41.5	+0.93	54 53.6	+1.07	9 12.6	2.09	11.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 1.					TUESDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 41 50.98	1.8788	N.10 59 1.2	10.315	0	4 15 9.24	2.0212	N.18 11 25.1	7.439
1	2 43 43.77	1.8809	11 9 18.8	10.271	1	4 17 10.62	2.0248	18 18 49.0	7.362
2	2 45 36.69	1.8830	11 19 33.7	10.226	2	4 19 12.22	2.0285	18 26 8.4	7.284
3	2 47 29.74	1.8852	11 29 45.9	10.181	3	4 21 14.03	2.0321	18 33 23.1	7.206
4	2 49 22.93	1.8875	11 39 55.3	10.135	4	4 23 16.06	2.0357	18 40 33.1	7.127
5	2 51 16.25	1.8898	11 50 2.0	10.088	5	4 25 18.31	2.0393	18 47 38.4	7.047
6	2 53 9.71	1.8921	12 0 5.9	10.040	6	4 27 20.78	2.0430	18 54 39.0	6.966
7	2 55 3.31	1.8944	12 10 6.9	9.992	7	4 29 23.47	2.0466	19 1 34.5	6.884
8	2 56 57.05	1.8967	12 20 5.0	9.943	8	4 31 26.38	2.0502	19 8 25.0	6.802
9	2 58 50.93	1.8992	12 30 0.1	9.894	9	4 33 29.50	2.0538	19 15 10.6	6.719
10	3 0 44.96	1.9017	12 39 52.2	9.844	10	4 35 32.84	2.0575	19 21 51.3	6.636
11	3 2 39.14	1.9042	12 49 41.3	9.793	11	4 37 36.40	2.0611	19 28 26.9	6.552
12	3 4 33.48	1.9068	12 59 27.3	9.742	12	4 39 40.18	2.0648	19 34 57.7	6.467
13	3 6 27.97	1.9095	13 9 10.3	9.690	13	4 41 44.18	2.0685	19 41 23.2	6.381
14	3 8 22.62	1.9122	13 18 50.1	9.637	14	4 43 48.40	2.0722	19 47 43.5	6.294
15	3 10 17.43	1.9148	13 28 26.7	9.584	15	4 45 52.84	2.0759	19 53 58.6	6.207
16	3 12 12.40	1.9175	13 38 0.1	9.530	16	4 47 57.50	2.0795	20 0 8.4	6.119
17	3 14 7.53	1.9202	13 47 30.3	9.475	17	4 50 2.37	2.0831	20 6 12.9	6.031
18	3 16 2.83	1.9230	13 56 57.2	9.420	18	4 52 7.46	2.0867	20 12 12.1	5.941
19	3 17 58.30	1.9258	14 6 20.7	9.364	19	4 54 12.77	2.0903	20 18 5.9	5.851
20	3 19 53.94	1.9287	14 15 40.8	9.307	20	4 56 18.29	2.0938	20 23 54.3	5.760
21	3 21 49.75	1.9316	14 24 57.5	9.250	21	4 58 24.03	2.0974	20 29 37.2	5.669
22	3 23 45.74	1.9345	14 34 10.8	9.192	22	5 0 29.99	2.1011	20 35 14.6	5.577
23	3 25 41.91	1.9375	N.14 43 20.6	9.133	23	5 2 36.16	2.1047	N.20 40 46.4	5.484
	MONDAY 2.					WEDNESDAY 4.			
0	3 27 38.26	1.9406	N.14 52 26.8	9.073	0	5 4 42.55	2.1083	N.20 46 12.6	5.391
1	3 29 34.80	1.9437	15 1 29.4	9.013	1	5 6 49.15	2.1118	20 51 33.2	5.297
2	3 31 31.52	1.9468	15 10 28.4	8.952	2	5 8 55.96	2.1153	20 56 48.2	5.202
3	3 33 28.42	1.9499	15 19 23.7	8.891	3	5 11 2.98	2.1188	21 1 57.5	5.107
4	3 35 25.51	1.9530	15 28 15.3	8.829	4	5 13 10.21	2.1223	21 7 1.1	5.010
5	3 37 22.79	1.9562	15 37 3.2	8.767	5	5 15 17.65	2.1258	21 11 58.9	4.913
6	3 39 20.26	1.9595	15 45 47.5	8.703	6	5 17 25.30	2.1293	21 16 50.8	4.815
7	3 41 17.92	1.9627	15 54 27.8	8.639	7	5 19 33.16	2.1327	21 21 36.8	4.717
8	3 43 15.78	1.9660	16 3 4.2	8.574	8	5 21 41.22	2.1360	21 26 16.8	4.618
9	3 45 13.84	1.9693	16 11 36.7	8.508	9	5 23 49.48	2.1394	21 30 50.9	4.519
10	3 47 12.10	1.9726	16 20 5.3	8.442	10	5 25 57.94	2.1427	21 35 19.0	4.418
11	3 49 10.56	1.9759	16 28 29.8	8.375	11	5 28 6.60	2.1460	21 39 41.1	4.318
12	3 51 9.21	1.9792	16 36 50.2	8.307	12	5 30 15.46	2.1493	21 43 57.2	4.217
13	3 53 8.07	1.9826	16 45 6.7	8.239	13	5 32 24.52	2.1526	21 48 7.3	4.115
14	3 55 7.13	1.9860	16 53 19.1	8.170	14	5 34 33.77	2.1558	21 52 11.3	4.012
15	3 57 6.40	1.9895	17 1 27.3	8.100	15	5 36 43.21	2.1590	21 56 9.0	3.909
16	3 59 5.88	1.9930	17 9 31.2	8.029	16	5 38 52.84	2.1621	22 0 0.4	3.804
17	4 1 5.56	1.9964	17 17 30.8	7.958	17	5 41 2.66	2.1653	22 3 45.5	3.700
18	4 3 5.45	1.9999	17 25 26.1	7.886	18	5 43 12.67	2.1684	22 7 24.3	3.594
19	4 5 5.55	2.0033	17 33 16.9	7.813	19	5 45 22.86	2.1715	22 10 56.8	3.489
20	4 7 5.86	2.0068	17 41 3.5	7.740	20	5 47 33.24	2.1745	22 14 22.9	3.383
21	4 9 6.38	2.0104	17 48 45.6	7.666	21	5 49 43.80	2.1774	22 17 42.7	3.277
22	4 11 7.12	2.0140	17 56 23.3	7.591	22	5 51 54.53	2.1803	22 20 56.1	3.170
23	4 13 8.07	2.0176	18 3 56.5	7.516	23	5 54 5.44	2.1832	22 24 3.0	3.062
24	4 15 9.24	2.0212	N.18 11 25.1	7.439	24	5 56 16.52	2.1860	N.22 27 3.4	2.953

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 5.					SATURDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	5 56 16.52	2.1860	N.22 27 3.4	2.953	0	7 43 28.63	2.2575	N.22 36 14.4	2.663
1	5 58 27.77	2.1888	22 29 57.3	2.843	1	7 45 44.09	2.2575	22 33 31.0	2.783
2	6 0 39.18	2.1916	22 32 44.6	2.733	2	7 47 59.54	2.2574	22 30 40.4	2.903
3	6 2 50.76	2.1943	22 35 25.3	2.623	3	7 50 14.98	2.2573	22 27 42.6	3.023
4	6 5 2.50	2.1970	22 37 59.4	2.513	4	7 52 30.41	2.2571	22 24 37.6	3.143
5	6 7 14.40	2.1996	22 40 26.9	2.403	5	7 54 45.83	2.2568	22 21 25.4	3.263
6	6 9 26.46	2.2022	22 42 47.7	2.292	6	7 57 1.23	2.2565	22 18 6.0	3.383
7	6 11 38.67	2.2047	22 45 1.8	2.180	7	7 59 16.60	2.2561	22 14 39.5	3.502
8	6 13 51.03	2.2072	22 47 9.3	2.067	8	8 1 31.95	2.2556	22 11 5.8	3.621
9	6 16 3.53	2.2096	22 49 10.0	1.954	9	8 3 47.27	2.2551	22 7 25.0	3.739
10	6 18 16.18	2.2120	22 51 3.9	1.840	10	8 6 2.56	2.2545	22 3 37.2	3.857
11	6 20 28.97	2.2143	22 52 51.0	1.727	11	8 8 17.81	2.2539	21 59 42.2	3.975
12	6 22 41.90	2.2166	22 54 31.2	1.613	12	8 10 33.02	2.2532	21 55 40.1	4.093
13	6 24 54.96	2.2188	22 56 4.6	1.498	13	8 12 48.19	2.2525	21 51 30.9	4.210
14	6 27 8.15	2.2209	22 57 31.1	1.383	14	8 15 3.32	2.2518	21 47 14.7	4.328
15	6 29 21.47	2.2230	22 58 50.6	1.268	15	8 17 18.40	2.2509	21 42 51.4	4.445
16	6 31 34.91	2.2250	23 0 3.2	1.152	16	8 19 33.43	2.2500	21 38 21.1	4.562
17	6 33 48.47	2.2270	23 1 8.9	1.036	17	8 21 48.40	2.2490	21 33 43.8	4.678
18	6 36 2.15	2.2289	23 2 7.6	0.919	18	8 24 3.31	2.2479	21 28 59.5	4.794
19	6 38 15.95	2.2308	23 2 59.3	0.803	19	8 26 18.15	2.2468	21 24 8.4	4.911
20	6 40 29.86	2.2326	23 3 44.0	0.686	20	8 28 32.93	2.2457	21 19 10.4	5.026
21	6 42 43.87	2.2343	23 4 21.6	0.569	21	8 30 47.65	2.2446	21 14 5.4	5.141
22	6 44 57.98	2.2360	23 4 52.2	0.451	22	8 33 2.30	2.2435	21 8 53.6	5.255
23	6 47 12.19	2.2376	N.23 5 15.7	0.333	23	8 35 16.87	2.2423	N.21 3 35.0	5.368
	FRIDAY 6.					SUNDAY 8.			
0	6 49 26.50	2.2392	N.23 5 32.2	0.215	0	8 37 31.37	2.2411	N.20 58 9.6	5.481
1	6 51 40.90	2.2407	23 5 41.5	+0.097	1	8 39 45.80	2.2398	20 52 37.4	5.594
2	6 53 55.39	2.2422	23 5 43.8	−0.022	2	8 42 0.15	2.2384	20 46 58.3	5.707
3	6 56 9.96	2.2436	23 5 38.9	0.141	3	8 44 14.41	2.2369	20 41 12.4	5.820
4	6 58 24.61	2.2449	23 5 26.9	0.260	4	8 46 28.58	2.2354	20 35 19.8	5.933
5	7 0 39.34	2.2461	23 5 7.7	0.380	5	8 48 42.66	2.2339	20 29 20.5	6.045
6	7 2 54.15	2.2473	23 4 41.3	0.499	6	8 50 56.65	2.2324	20 23 14.4	6.155
7	7 5 9.03	2.2484	23 4 7.8	0.619	7	8 53 10.54	2.2308	20 17 1.7	6.265
8	7 7 23.97	2.2494	23 3 27.1	0.738	8	8 55 24.34	2.2292	20 10 42.5	6.374
9	7 9 38.96	2.2504	23 2 39.2	0.858	9	8 57 38.04	2.2276	20 4 16.8	6.483
10	7 11 54.01	2.2513	23 1 44.1	0.978	10	8 59 51.65	2.2260	19 57 44.5	6.592
11	7 14 9.11	2.2522	23 0 41.8	1.098	11	9 2 5.17	2.2244	19 51 5.7	6.700
12	7 16 24.27	2.2530	22 59 32.3	1.219	12	9 4 18.59	2.2228	19 44 20.4	6.808
13	7 18 39.48	2.2538	22 58 15.5	1.339	13	9 6 31.90	2.2210	19 37 28.8	6.915
14	7 20 54.73	2.2545	22 56 51.5	1.460	14	9 8 45.10	2.2192	19 30 30.7	7.021
15	7 23 10.02	2.2550	22 55 20.3	1.580	15	9 10 58.19	2.2173	19 23 26.2	7.127
16	7 25 25.34	2.2555	22 53 41.8	1.701	16	9 13 11.17	2.2154	19 16 15.4	7.232
17	7 27 40.69	2.2559	22 51 56.1	1.821	17	9 15 24.03	2.2136	19 8 58.3	7.337
18	7 29 56.06	2.2563	22 50 3.2	1.942	18	9 17 36.78	2.2117	19 1 35.0	7.440
19	7 32 11.45	2.2566	22 48 3.1	2.062	19	9 19 49.42	2.2098	18 54 5.5	7.543
20	7 34 26.86	2.2569	22 45 55.8	2.183	20	9 22 1.95	2.2079	18 46 29.8	7.645
21	7 36 42.29	2.2571	22 43 41.3	2.303	21	9 24 14.36	2.2060	18 38 48.1	7.747
22	7 38 57.73	2.2573	22 41 19.6	2.423	22	9 26 26.66	2.2040	18 31 0.2	7.849
23	7 41 13.18	2.2574	22 38 50.6	2.543	23	9 28 38.84	2.2020	18 23 6.3	7.950
24	7 43 28.63	2.2575	N.22 36 14.4	2.663	24	9 30 50.90	2.2000	N.18 15 6.3	8.050

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 9.					WEDNESDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 30 50.90	2.2000	N.18 15 6.3	8.050	0	11 14 10.60	2.1116	N.10 8 48.8	11.884
1	9 33 2.84	2.1980	18 7 0.4	8.149	1	11 16 17.26	2.1104	9 56 54.0	11.941
2	9 35 14.66	2.1960	17 58 48.5	8.247	2	11 18 23.85	2.1092	9 44 55.8	11.997
3	9 37 26.36	2.1940	17 50 30.7	8.345	3	11 20 30.37	2.1080	9 32 54.2	12.053
4	9 39 37.93	2.1919	17 42 7.1	8.441	4	11 22 36.82	2.1068	9 20 49.3	12.108
5	9 41 49.38	2.1899	17 33 37.7	8.537	5	11 24 43.20	2.1058	9 8 41.1	12.163
6	9 44 0.71	2.1878	17 25 2.6	8.632	6	11 26 49.52	2.1048	8 56 29.8	12.216
7	9 46 11.92	2.1858	17 16 21.9	8.727	7	11 28 55.78	2.1039	8 44 15.1	12.268
8	9 48 23.00	2.1837	17 7 35.5	8.820	8	11 31 1.99	2.1030	8 31 57.5	12.318
9	9 50 33.96	2.1816	16 58 43.5	8.913	9	11 33 8.15	2.1021	8 19 36.9	12.368
10	9 52 44.79	2.1795	16 49 45.9	9.006	10	11 35 14.26	2.1013	8 7 13.3	12.417
11	9 54 55.50	2.1774	16 40 42.8	9.098	11	11 37 20.32	2.1005	7 54 46.7	12.466
12	9 57 6.09	2.1753	16 31 34.2	9.188	12	11 39 26.34	2.0998	7 42 17.3	12.513
13	9 59 16.55	2.1731	16 22 20.1	9.278	13	11 41 32.32	2.0991	7 29 45.1	12.560
14	10 1 26.88	2.1710	16 13 0.7	9.368	14	11 43 38.26	2.0985	7 17 10.1	12.605
15	10 3 37.08	2.1690	16 3 36.0	9.457	15	11 45 44.16	2.0979	7 4 32.4	12.650
16	10 5 47.16	2.1670	15 54 6.0	9.544	16	11 47 50.02	2.0973	6 51 52.1	12.693
17	10 7 57.12	2.1650	15 44 30.7	9.630	17	11 49 55.85	2.0969	6 39 9.3	12.735
18	10 10 6.96	2.1630	15 34 50.3	9.716	18	11 52 1.66	2.0965	6 26 24.0	12.776
19	10 12 16.69	2.1610	15 25 4.8	9.801	19	11 54 7.45	2.0962	6 13 36.2	12.817
20	10 14 26.30	2.1591	15 15 14.2	9.885	20	11 56 13.23	2.0960	6 0 46.0	12.855
21	10 16 35.79	2.1571	15 5 18.6	9.968	21	11 58 19.00	2.0958	5 47 53.5	12.893
22	10 18 45.16	2.1551	14 55 18.0	10.051	22	12 0 24.76	2.0957	5 34 58.8	12.929
23	10 20 54.41	2.1531	N.14 45 12.5	10.133	23	12 2 30.50	2.0956	N. 5 22 2.0	12.965
	TUESDAY 10.					THURSDAY 12.			
0	10 23 3.54	2.1512	N.14 35 2.1	10.213	0	12 4 36.23	2.0955	N. 5 9 3.1	13.000
1	10 25 12.55	2.1492	14 24 46.8	10.293	1	12 6 41.96	2.0955	4 56 2.0	13.034
2	10 27 21.44	2.1472	14 14 26.8	10.372	2	12 8 47.69	2.0955	4 42 59.0	13.067
3	10 29 30.22	2.1452	14 4 2.1	10.450	3	12 10 53.43	2.0957	4 29 54.0	13.099
4	10 31 38.89	2.1433	13 53 32.7	10.528	4	12 12 59.19	2.0960	4 16 47.2	13.130
5	10 33 47.44	2.1415	13 42 58.7	10.605	5	12 15 4.96	2.0962	4 3 38.5	13.159
6	10 35 55.88	2.1397	13 32 20.1	10.680	6	12 17 10.75	2.0965	3 50 28.0	13.188
7	10 38 4.20	2.1378	13 21 37.0	10.755	7	12 19 16.55	2.0968	3 37 15.8	13.215
8	10 40 12.41	2.1360	13 10 49.5	10.829	8	12 21 22.37	2.0972	3 24 2.0	13.242
9	10 42 20.52	2.1342	12 59 57.6	10.902	9	12 23 28.21	2.0977	3 10 46.6	13.267
10	10 44 28.53	2.1325	12 49 1.4	10.973	10	12 25 34.08	2.0982	2 57 29.7	13.292
11	10 46 36.43	2.1308	12 38 0.9	11.043	11	12 27 39.99	2.0988	2 44 11.4	13.315
12	10 48 44.23	2.1292	12 26 56.2	11.113	12	12 29 45.94	2.0995	2 30 51.7	13.338
13	10 50 51.94	2.1276	12 15 47.3	11.182	13	12 31 51.94	2.1002	2 17 30.7	13.359
14	10 52 59.55	2.1260	12 4 34.2	11.250	14	12 33 57.98	2.1010	2 4 8.5	13.379
15	10 55 7.06	2.1244	11 53 17.1	11.318	15	12 36 4.07	2.1019	1 50 45.1	13.398
16	10 57 14.47	2.1228	11 41 56.0	11.385	16	12 38 10.22	2.1028	1 37 20.6	13.416
17	10 59 21.79	2.1212	11 30 30.9	11.451	17	12 40 16.42	2.1038	1 23 55.0	13.433
18	11 1 29.02	2.1197	11 19 1.8	11.515	18	12 42 22.68	2.1048	1 10 28.5	13.449
19	11 3 36.16	2.1182	11 7 28.9	11.579	19	12 44 29.01	2.1060	0 57 1.1	13.463
20	11 5 43.21	2.1167	10 55 52.3	11.641	20	12 46 35.41	2.1072	0 43 32.8	13.477
21	11 7 50.17	2.1153	10 44 12.0	11.703	21	12 48 41.88	2.1085	0 30 3.9	13.489
22	11 9 57.05	2.1140	10 32 27.9	11.764	22	12 50 48.43	2.1098	0 16 34.2	13.500
23	11 12 3.86	2.1128	10 20 40.1	11.825	23	12 52 55.06	2.1112	N. 0 3 3.9	13.510
24	11 14 10.60	2.1116	N.10 8 48.8	11.884	24	12 55 1.78	2.1127	S. 0 10 26.9	13.519

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 13.					SUNDAY 15.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 55 1.78	2.1127	S. 0 10 26.9	13.519	0	14 39 22.98	2.2598	S. 10 46 37.7	12.489
1	12 57 8.59	2.1142	0 23 58.2	13.526	1	14 41 38.71	2.2644	10 59 5.5	12.434
2	12 59 15.49	2.1158	0 37 30.0	13.533	2	14 43 54.71	2.2690	11 11 30.0	12.379
3	13 1 22.49	2.1175	0 51 2.2	13.538	3	14 46 10.99	2.2736	11 23 51.1	12.321
4	13 3 29.59	2.1192	1 4 34.8	13.543	4	14 48 27.54	2.2782	11 36 8.7	12.263
5	13 5 36.79	2.1210	1 18 7.6	13.546	5	14 50 44.37	2.2829	11 48 22.8	12.202
6	13 7 44.10	2.1228	1 31 40.5	13.548	6	14 53 1.49	2.2876	12 0 33.2	12.140
7	13 9 51.53	2.1248	1 45 13.5	13.548	7	14 55 18.89	2.2924	12 12 39.8	12.076
8	13 11 59.08	2.1268	1 58 46.5	13.548	8	14 57 36.58	2.2973	12 24 42.5	12.012
9	13 14 6.75	2.1289	2 12 19.4	13.546	9	14 59 54.57	2.3021	12 36 41.3	11.945
10	13 16 14.54	2.1310	2 25 52.2	13.544	10	15 2 12.85	2.3070	12 48 36.0	11.878
11	13 18 22.46	2.1332	2 39 24.8	13.540	11	15 4 31.42	2.3120	13 0 26.6	11.808
12	13 20 30.52	2.1355	2 52 57.2	13.535	12	15 6 50.29	2.3170	13 12 13.0	11.737
13	13 22 38.72	2.1378	3 6 29.1	13.528	13	15 9 9.47	2.3221	13 23 55.1	11.664
14	13 24 47.06	2.1402	3 20 0.6	13.521	14	15 11 28.95	2.3272	13 35 32.8	11.591
15	13 26 55.54	2.1426	3 33 31.7	13.512	15	15 13 48.74	2.3323	13 47 6.1	11.515
16	13 29 4.17	2.1450	3 47 2.2	13.502	16	15 16 8.84	2.3374	13 58 34.9	11.439
17	13 31 12.95	2.1476	4 0 32.0	13.491	17	15 18 29.24	2.3425	14 9 59.0	11.360
18	13 33 21.89	2.1503	4 14 1.1	13.479	18	15 20 49.94	2.3476	14 21 18.3	11.280
19	13 35 31.00	2.1530	4 27 29.5	13.465	19	15 23 10.95	2.3527	14 32 32.7	11.198
20	13 37 40.27	2.1558	4 40 57.0	13.450	20	15 25 32.27	2.3578	14 43 42.1	11.115
21	13 39 49.71	2.1588	4 54 23.6	13.433	21	15 27 53.89	2.3629	14 54 46.5	11.030
22	13 41 59.33	2.1618	5 7 49.2	13.416	22	15 30 15.82	2.3681	15 5 45.8	10.944
23	13 44 9.13	2.1649	S. 5 21 13.8	13.397	23	15 32 38.06	2.3733	S. 15 16 39.9	10.856
	SATURDAY 14.					MONDAY 16.			
0	13 46 19.12	2.1680	S. 5 34 37.1	13.377	0	15 35 0.62	2.3786	S. 15 27 28.7	10.768
1	13 48 29.29	2.1711	5 47 59.2	13.355	1	15 37 23.50	2.3839	15 38 12.2	10.677
2	13 50 39.64	2.1742	6 1 20.0	13.333	2	15 39 46.70	2.3893	15 48 50.0	10.585
3	13 52 50.19	2.1774	6 14 39.4	13.309	3	15 42 10.22	2.3946	15 59 22.2	10.490
4	13 55 0.93	3.1807	6 27 57.3	13.284	4	15 44 34.06	2.4000	16 9 48.8	10.395
5	13 57 11.87	2.1841	6 41 13.5	13.257	5	15 46 58.22	2.4053	16 20 9.7	10.298
6	13 59 23.02	2.1875	6 54 28.1	13.229	6	15 49 22.70	2.4107	16 30 24.8	10.200
7	14 1 34.38	2.1911	7 7 41.0	13.199	7	15 51 47.50	2.4160	16 40 34.0	10.100
8	14 3 45.95	2.1947	7 20 52.1	13.169	8	15 54 12.62	2.4212	16 50 37.1	9.998
9	14 5 57.74	2.1984	7 34 1.3	13.133	9	15 56 38.05	2.4265	17 0 34.0	9.895
10	14 8 9.76	2.2022	7 47 8.5	13.103	10	15 59 3.80	2.4317	17 10 24.6	9.791
11	14 10 22.00	2.2059	8 0 13.7	13.068	11	16 1 29.86	2.4370	17 20 8.8	9.684
12	14 12 34.46	2.2097	8 13 16.8	13.033	12	16 3 56.24	2.4423	17 29 46.6	9.577
13	14 14 47.16	2.2136	8 26 17.7	12.995	13	16 6 22.93	2.4475	17 39 17.9	9.467
14	14 17 0.09	2.2175	8 39 16.3	12.956	14	16 8 49.93	2.4527	17 48 42.6	9.357
15	14 19 13.26	2.2215	8 52 12.6	12.915	15	16 11 17.24	2.4578	17 58 0.7	9.245
16	14 21 26.67	2.2255	9 5 6.4	12.874	16	16 13 44.86	2.4630	18 7 12.1	9.132
17	14 23 40.32	2.2296	9 17 57.7	12.831	17	16 16 12.79	2.4682	18 16 16.7	9.016
18	14 25 54.22	2.2337	9 30 46.3	12.787	18	16 18 41.03	2.4733	18 25 14.3	8.900
19	14 28 8.37	2.2379	9 43 32.2	12.740	19	16 21 9.59	2.4785	18 34 4.9	8.782
20	14 30 22.77	2.2422	9 56 15.3	12.693	20	16 23 38.46	2.4836	18 42 48.3	8.663
21	14 32 37.43	2.2465	10 8 55.4	12.644	21	16 26 7.63	2.4886	18 51 24.5	8.542
22	14 34 52.35	2.2508	10 21 32.6	12.594	22	16 28 37.09	2.4935	18 59 53.4	8.420
23	14 37 7.53	2.2553	10 34 6.7	12.542	23	16 31 6.84	2.4984	19 8 15.0	8.296
24	14 39 22.98	2.2598	S. 10 46 37.7	12.489	24	16 33 36.88	2.5032	S. 19 16 29.3	8.172

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 33 36.88	2.5032	S. 19 16 29.3	8.172
1	16 36 7.22	2.5080	19 24 36.1	8.045
2	16 38 37.85	2.5128	19 32 35.2	7.918
3	16 41 8.76	2.5176	19 40 26.5	7.789
4	16 43 39.95	2.5223	19 48 9.9	7.659
5	16 46 11.42	2.5269	19 55 45.4	7.527
6	16 48 43.17	2.5314	20 3 13.0	7.394
7	16 51 15.19	2.5358	20 10 32.6	7.259
8	16 53 47.47	2.5402	20 17 44.1	7.124
9	16 56 20.01	2.5445	20 24 47.5	6.987
10	16 58 52.81	2.5489	20 31 42.7	6.849
11	17 1 25.87	2.5532	20 38 29.5	6.710
12	17 3 59.18	2.5574	20 45 7.9	6.570
13	17 6 32.74	2.5615	20 51 37.8	6.428
14	17 9 6.55	2.5654	20 57 59.2	6.285
15	17 11 40.59	2.5692	21 4 12.0	6.141
16	17 14 14.85	2.5729	21 10 16.1	5.997
17	17 16 49.33	2.5765	21 16 11.6	5.851
18	17 19 24.03	2.5801	21 21 58.3	5.704
19	17 21 58.94	2.5836	21 27 36.2	5.556
20	17 24 34.06	2.5870	21 33 5.2	5.407
21	17 27 9.38	2.5903	21 38 25.2	5.257
22	17 29 44.90	2.5935	21 43 36.1	5.106
23	17 32 20.61	2.5967	S. 21 48 38.0	4.954

WEDNESDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 34 56.50	2.5997	S. 21 53 30.8	4.802
1	17 37 32.57	2.6026	21 58 14.4	4.648
2	17 40 8.81	2.6053	22 2 48.7	4.494
3	17 42 45.21	2.6080	22 7 13.6	4.339
4	17 45 21.76	2.6105	22 11 29.2	4.183
5	17 47 58.46	2.6129	22 15 35.5	4.026
6	17 50 35.30	2.6151	22 19 32.4	3.869
7	17 53 12.28	2.6173	22 23 19.7	3.711
8	17 55 49.39	2.6193	22 26 57.6	3.553
9	17 58 26.61	2.6213	22 30 26.0	3.393
10	18 1 3.94	2.6230	22 33 44.8	3.233
11	18 3 41.37	2.6247	22 36 54.0	3.073
12	18 6 18.90	2.6262	22 39 53.5	2.912
13	18 8 56.52	2.6276	22 42 43.4	2.750
14	18 11 34.22	2.6288	22 45 23.6	2.588
15	18 14 11.99	2.6300	22 47 54.1	2.426
16	18 16 49.82	2.6310	22 50 14.8	2.263
17	18 19 27.70	2.6319	22 52 25.7	2.100
18	18 22 5.64	2.6326	22 54 26.8	1.937
19	18 24 43.62	2.6333	22 56 18.1	1.773
20	18 27 21.63	2.6337	22 57 59.6	1.610
21	18 29 59.66	2.6340	22 59 31.3	1.447
22	18 32 37.70	2.6340	23 0 53.2	1.284
23	18 35 15.74	2.6340	23 2 5.3	1.120
24	18 37 53.78	2.6338	S. 23 3 7.7	0.956

THURSDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 37 53.78	2.6338	S. 23 3 7.7	0.956
1	18 40 31.81	2.6336	23 4 0.4	0.792
2	18 43 9.82	2.6332	23 4 43.3	0.628
3	18 45 47.80	2.6327	23 5 16.2	0.463
4	18 48 25.74	2.6320	23 5 39.1	0.298
5	18 51 3.63	2.6312	23 5 52.0	−0.133
6	18 53 41.47	2.6302	23 5 55.3	+0.031
7	18 56 19.25	2.6291	23 5 48.7	0.195
8	18 58 56.96	2.6278	23 5 32.1	0.358
9	19 1 34.58	2.6264	23 5 5.7	0.521
10	19 4 12.12	2.6248	23 4 29.6	0.683
11	19 6 49.56	2.6231	23 3 43.8	0.845
12	19 9 26.89	2.6212	23 2 48.3	1.006
13	19 12 4.11	2.6193	23 1 43.1	1.167
14	19 14 41.21	2.6172	23 0 28.3	1.327
15	19 17 18.18	2.6150	22 59 3.9	1.487
16	19 19 55.01	2.6125	22 57 29.8	1.646
17	19 22 31.69	2.6100	22 55 46.1	1.805
18	19 25 8.21	2.6073	22 53 52.9	1.964
19	19 27 44.57	2.6046	22 51 50.2	2.122
20	19 30 20.76	2.6017	22 49 38.0	2.280
21	19 32 56.77	2.5987	22 47 16.4	2.437
22	19 35 32.60	2.5955	22 44 45.4	2.594
23	19 38 8.23	2.5922	S. 22 42 5.0	2.750

FRIDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 40 43.66	2.5888	S. 22 39 15.3	2.904
1	19 43 18.88	2.5853	22 36 16.3	3.058
2	19 45 53.89	2.5817	22 33 8.2	3.211
3	19 48 28.68	2.5780	22 29 51.0	3.363
4	19 51 3.24	2.5740	22 26 24.7	3.514
5	19 53 37.56	2.5700	22 22 49.3	3.665
6	19 56 11.63	2.5658	22 19 4.8	3.814
7	19 58 45.46	2.5616	22 15 11.4	3.963
8	20 1 19.03	2.5572	22 11 9.2	4.109
9	20 3 52.33	2.5528	22 6 58.2	4.255
10	20 6 25.37	2.5483	22 2 38.5	4.401
11	20 8 58.13	2.5437	21 58 10.1	4.547
12	20 11 30.61	2.5390	21 53 33.0	4.690
13	20 14 2.80	2.5341	21 48 47.4	4.832
14	20 16 34.70	2.5292	21 43 53.3	4.971
15	20 19 6.30	2.5242	21 38 50.9	5.110
16	20 21 37.60	2.5191	21 33 40.1	5.249
17	20 24 8.60	2.5139	21 28 21.0	5.387
18	20 26 39.29	2.5087	21 22 53.6	5.523
19	20 29 9.65	2.5034	21 17 18.2	5.657
20	20 31 39.69	2.4980	21 11 34.7	5.790
21	20 34 9.40	2.4925	21 5 43.3	5.922
22	20 36 38.78	2.4869	20 59 44.0	6.054
23	20 39 7.82	2.4812	20 53 36.9	6.185
24	20 41 36.52	2.4755	S. 20 47 22.0	6.312

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 41 36.52	2.4755	S. 20 47 22.0	6.312
1	20 44 4.88	2.4698	20 40 59.4	6.438
2	20 46 32.89	2.4640	20 34 29.3	6.562
3	20 49 0.55	2.4581	20 27 51.8	6.685
4	20 51 27.86	2.4522	20 21 6.9	6.808
5	20 53 54.81	2.4462	20 14 14.7	6.930
6	20 56 21.40	2.4402	20 7 15.3	7.051
7	20 58 47.62	2.4341	20 0 8.7	7.170
8	21 1 13.47	2.4279	19 52 55.0	7.286
9	21 3 38.95	2.4217	19 45 34.4	7.400
10	21 6 4.06	2.4155	19 38 6.9	7.515
11	21 8 28.80	2.4092	19 30 32.5	7.627
12	21 10 53.16	2.4029	19 22 51.4	7.738
13	21 13 17.14	2.3966	19 15 3.7	7.848
14	21 15 40.74	2.3902	19 7 9.6	7.956
15	21 18 3.96	2.3839	18 59 9.1	8.064
16	21 20 26.80	2.3775	18 51 2.2	8.170
17	21 22 49.25	2.3711	18 42 48.9	8.275
18	21 25 11.32	2.3647	18 34 29.3	8.377
19	21 27 33.00	2.3582	18 26 3.6	8.479
20	21 29 54.29	2.3517	18 17 32.0	8.578
21	21 32 15.20	2.3452	18 8 54.6	8.675
22	21 34 35.72	2.3388	18 0 11.3	8.770
23	21 36 55.85	2.3323	S. 17 51 22.2	8.865

SUNDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 39 15.59	2.3257	S. 17 42 27.3	8.958
1	21 41 34.93	2.3192	17 33 26.8	9.050
2	21 43 53.88	2.3127	17 24 20.6	9.139
3	21 46 12.44	2.3062	17 15 9.6	9.227
4	21 48 30.62	2.2997	17 5 53.1	9.314
5	21 50 48.41	2.2932	16 56 31.5	9.401
6	21 53 5.81	2.2867	16 47 4.8	9.486
7	21 55 22.82	2.2802	16 37 33.1	9.570
8	21 57 39.44	2.2737	16 27 56.5	9.651
9	21 59 55.67	2.2672	16 18 15.1	9.730
10	22 2 11.51	2.2608	16 8 29.1	9.807
11	22 4 26.96	2.2544	15 58 38.4	9.883
12	22 6 42.03	2.2480	15 48 43.1	9.958
13	22 8 56.72	2.2416	15 38 43.2	10.033
14	22 11 11.03	2.2352	15 28 39.0	10.106
15	22 13 24.95	2.2288	15 18 30.3	10.178
16	22 15 38.49	2.2225	15 8 17.3	10.248
17	22 17 51.65	2.2162	14 58 0.2	10.318
18	22 20 4.44	2.2100	14 47 38.8	10.385
19	22 22 16.86	2.2038	14 37 13.5	10.451
20	22 24 28.91	2.1977	14 26 44.5	10.515
21	22 26 40.58	2.1915	14 16 11.7	10.577
22	22 28 51.89	2.1854	14 5 35.2	10.637
23	22 31 2.83	2.1793	13 54 55.0	10.697
24	22 33 13.41	2.1732	S. 13 44 11.1	10.755

MONDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 33 13.41	2.1732	S. 13 44 11.1	10.755
1	22 35 23.62	2.1672	13 33 23.6	10.813
2	22 37 33.47	2.1612	13 22 33.0	10.869
3	22 39 42.97	2.1552	13 11 39.1	10.925
4	22 41 52.11	2.1493	13 0 41.9	10.979
5	22 44 0.90	2.1435	12 49 41.5	11.032
6	22 46 9.34	2.1377	12 38 37.9	11.084
7	22 48 17.43	2.1320	12 27 31.5	11.134
8	22 50 25.18	2.1263	12 16 22.0	11.181
9	22 52 32.60	2.1207	12 5 9.7	11.227
10	22 54 39.68	2.1151	11 53 54.6	11.272
11	22 56 46.42	2.1095	11 42 36.8	11.317
12	22 58 52.83	2.1040	11 31 16.3	11.360
13	23 0 58.91	2.0986	11 19 53.3	11.403
14	23 3 4.66	2.0932	11 8 27.9	11.444
15	23 5 10.09	2.0878	10 57 0.1	11.485
16	23 7 15.20	2.0825	10 45 30.0	11.523
17	23 9 19.99	2.0773	10 33 57.6	11.560
18	23 11 24.47	2.0721	10 22 22.9	11.595
19	23 13 28.65	2.0669	10 10 46.1	11.630
20	23 15 32.52	2.0618	9 59 7.3	11.663
21	23 17 36.08	2.0568	9 47 26.5	11.695
22	23 19 39.34	2.0518	9 35 43.8	11.726
23	23 21 42.31	2.0470	S. 9 23 59.1	11.756

TUESDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 23 44.98	2.0422	S. 9 12 12.6	11.785
1	23 25 47.37	2.0374	9 0 24.5	11.813
2	23 27 49.47	2.0327	8 48 34.8	11.840
3	23 29 51.29	2.0280	8 36 43.5	11.867
4	23 31 52.83	2.0233	8 24 50.7	11.891
5	23 33 54.10	2.0188	8 12 56.5	11.915
6	23 35 55.10	2.0143	8 1 0.9	11.938
7	23 37 55.83	2.0099	7 49 3.9	11.960
8	23 39 56.30	2.0056	7 37 5.6	11.981
9	23 41 56.51	2.0013	7 25 6.1	12.002
10	23 43 56.46	1.9970	7 13 5.4	12.020
11	23 45 56.16	1.9929	7 1 3.6	12.038
12	23 47 55.61	1.9888	6 49 0.8	12.054
13	23 49 54.82	1.9848	6 36 57.1	12.070
14	23 51 53.79	1.9808	6 24 52.6	12.084
15	23 53 52.52	1.9769	6 12 47.3	12.097
16	23 55 51.02	1.9730	6 0 41.1	12.110
17	23 57 49.29	1.9692	5 48 34.1	12.123
18	23 59 47.34	1.9655	5 36 26.4	12.134
19	0 1 45.17	1.9619	5 24 18.6	12.145
20	0 3 42.78	1.9583	5 12 9.0	12.154
21	0 5 40.18	1.9549	4 59 59.5	12.162
22	0 7 37.37	1.9515	4 47 49.6	12.169
23	0 9 34.86	1.9481	4 35 39.3	12.175
24	0 11 31.15	1.9448	S. 4 23 28.6	12.180

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 25.					FRIDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	0 11 31.15	1.9448	S. 4 23 28.6	12.180	0	1 42 18.87	1.8633	N. 5 12 52.5	11.567
1	0 13 27.74	1.9415	4 11 17.6	12.185	1	1 44 10.67	1.8633	5 24 25.7	11.538
2	0 15 24.14	1.9383	3 59 6.4	12.188	2	1 46 2.47	1.8633	5 35 57.1	11.508
3	0 17 20.35	1.9352	3 46 55.0	12.191	3	1 47 54.27	1.8633	5 47 26.7	11.478
4	0 19 16.37	1.9322	3 34 43.6	12.193	4	1 49 46.07	1.8633	5 58 54.5	11.447
5	0 21 12.21	1.9292	3 22 32.0	12.195	5	1 51 37.87	1.8635	6 10 20.5	11.416
6	0 23 7.87	1.9263	3 10 20.3	12.195	6	1 53 29.68	1.8637	6 21 44.6	11.384
7	0 25 3.36	1.9235	2 58 8.6	12.195	7	1 55 21.50	1.8639	6 33 6.7	11.352
8	0 26 58.69	1.9208	2 45 56.9	12.194	8	1 57 13.34	1.8642	6 44 26.8	11.319
9	0 28 53.85	1.9180	2 33 45.3	12.192	9	1 59 5.20	1.8645	6 55 44.9	11.285
10	0 30 48.85	1.9153	2 21 33.8	12.190	10	2 0 57.08	1.8648	7 7 0.9	11.251
11	0 32 43.69	1.9127	2 9 22.4	12.187	11	2 2 48.98	1.8653	7 18 14.9	11.217
12	0 34 38.38	1.9102	1 57 11.2	12.182	12	2 4 40.91	1.8658	7 29 26.9	11.182
13	0 36 32.92	1.9078	1 45 0.3	12.177	13	2 6 32.88	1.8665	7 40 36.8	11.147
14	0 38 27.32	1.9055	1 32 49.8	12.170	14	2 8 24.89	1.8672	7 51 44.5	11.110
15	0 40 21.58	1.9032	1 20 39.7	12.163	15	2 10 16.94	1.8679	8 2 50.0	11.072
16	0 42 15.70	1.9010	1 8 30.1	12.155	16	2 12 9.04	1.8687	8 13 53.3	11.035
17	0 44 9.69	1.8988	0 56 21.0	12.147	17	2 14 1.18	1.8695	8 24 54.3	10.997
18	0 46 3.55	1.8967	0 44 12.3	12.139	18	2 15 53.37	1.8703	8 35 52.9	10.958
19	0 47 57.28	1.8946	0 32 4.1	12.130	19	2 17 45.62	1.8712	8 46 49.2	10.918
20	0 49 50.89	1.8925	0 19 56.4	12.120	20	2 19 37.93	1.8721	8 57 43.0	10.878
21	0 51 44.38	1.8906	S. 0 7 49.5	12.110	21	2 21 30.30	1.8731	9 8 34.3	10.837
22	0 53 37.76	1.8887	N. 0 4 16.8	12.099	22	2 23 22.72	1.8742	9 19 23.2	10.796
23	0 55 31.03	1.8870	N. 0 16 22.4	12.087	23	2 25 15.21	1.8754	N. 9 30 9.6	10.755
	THURSDAY 26.					SATURDAY 28.			
0	0 57 24.20	1.8853	N. 0 28 27.2	12.074	0	2 27 7.77	1.8767	N. 9 40 53.6	10.713
1	0 59 17.27	1.8836	0 40 31.1	12.060	1	2 29 0.41	1.8780	9 51 35.1	10.670
2	1 1 10.24	1.8820	0 52 34.2	12.045	2	2 30 53.13	1.8793	10 2 14.0	10.626
3	1 3 3.12	1.8805	1 4 36.4	12.030	3	2 32 45.93	1.8806	10 12 50.3	10.582
4	1 4 55.91	1.8790	1 16 37.8	12.014	4	2 34 38.81	1.8820	10 23 23.9	10.537
5	1 6 48.61	1.8776	1 28 38.3	11.998	5	2 36 31.78	1.8835	10 33 54.8	10.492
6	1 8 41.23	1.8763	1 40 37.8	11.981	6	2 38 24.84	1.8850	10 44 22.9	10.446
7	1 10 33.77	1.8750	1 52 36.3	11.964	7	2 40 17.99	1.8866	10 54 48.4	10.400
8	1 12 26.24	1.8738	2 4 33.7	11.946	8	2 42 11.24	1.8883	11 5 11.0	10.353
9	1 14 18.64	1.8727	2 16 29.9	11.927	9	2 44 4.59	1.8900	11 15 30.8	10.305
10	1 16 10.97	1.8717	2 28 24.9	11.907	10	2 45 58.04	1.8917	11 25 47.7	10.257
11	1 18 3.24	1.8707	2 40 18.7	11.886	11	2 47 51.60	1.8934	11 36 1.7	10.208
12	1 19 55.46	1.8698	2 52 11.3	11.865	12	2 49 45.26	1.8952	11 46 12.7	10.159
13	1 21 47.62	1.8690	3 4 2.7	11.843	13	2 51 39.03	1.8971	11 56 20.7	10.110
14	1 23 39.73	1.8682	3 15 52.7	11.821	14	2 53 32.92	1.8990	12 6 25.7	10.060
15	1 25 31.80	1.8674	3 27 41.4	11.798	15	2 55 26.92	1.9011	12 16 27.7	10.009
16	1 27 23.82	1.8667	3 39 28.7	11.775	16	2 57 21.05	1.9032	12 26 26.7	9.957
17	1 29 15.80	1.8661	3 51 14.6	11.751	17	2 59 15.31	1.9052	12 36 22.6	9.905
18	1 31 7.75	1.8655	4 2 58.9	11.727	18	3 1 9.69	1.9073	12 46 15.3	9.852
19	1 32 59.66	1.8650	4 14 41.9	11.702	19	3 3 4.20	1.9095	12 56 4.9	9.799
20	1 34 51.54	1.8645	4 26 23.3	11.676	20	3 4 58.83	1.9117	13 5 51.3	9.745
21	1 36 43.40	1.8641	4 38 3.0	11.650	21	3 6 53.59	1.9139	13 15 34.4	9.690
22	1 38 35.24	1.8638	4 49 41.1	11.623	22	3 8 48.49	1.9162	13 25 14.2	9.634
23	1 40 27.06	1.8635	5 1 17.6	11.595	23	3 10 43.53	1.9185	13 34 50.6	9.578
24	1 42 18.87	1.8633	N. 5 12 52.5	11.567	24	3 12 38.72	1.9208	N.13 44 23.6	9.522

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 12 38.72	1.9208	N.13 44 23.6	9.522
1	3 14 34.05	1.9232	13 53 53.1	9.465
2	3 16 29.52	1.9257	14 3 19.2	9.407
3	3 18 25.14	1.9282	14 12 41.9	9.349
4	3 20 20.91	1.9307	14 22 1.1	9.291
5	3 22 16.83	1.9333	14 31 16.8	9.232
6	3 24 12.91	1.9360	14 40 28.9	9.172
7	3 26 9.16	1.9387	14 49 37.4	9.112
8	3 28 5.58	1.9415	14 58 42.3	9.050
9	3 30 2.17	1.9443	15 7 43.5	8.988
10	3 31 58.92	1.9472	15 16 40.9	8.925
11	3 33 55.84	1.9500	15 25 34.5	8.862
12	3 35 52.93	1.9528	15 34 24.3	8.794
13	3 37 50.18	1.9557	15 43 10.2	8.733
14	3 39 47.61	1.9587	15 51 52.2	8.668
15	3 41 45.22	1.9617	16 0 30.2	8.602
16	3 43 43.01	1.9647	16 9 4.3	8.536
17	3 45 40.98	1.9677	16 17 34.5	8.469
18	3 47 39.13	1.9707	16 26 0.7	8.401
19	3 49 37.46	1.9737	16 34 22.8	8.333
20	3 51 35.98	1.9768	16 42 40.7	8.263
21	3 53 34.69	1.9800	16 50 54.4	8.193
22	3 55 33.59	1.9832	16 59 3.9	8.122
23	3 57 32.68	1.9864	N.17 7 9.1	8.051

MONDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 59 31.96	1.9895	N.17 15 10.1	7.979
1	4 1 31.43	1.9928	17 23 6.8	7.907
2	4 3 31.10	1.9962	17 30 59.1	7.834
3	4 5 30.97	1.9996	17 38 47.0	7.761
4	4 7 31.05	2.0030	17 46 30.5	7.687
5	4 9 31.33	2.0063	17 54 9.5	7.612
6	4 11 31.81	2.0097	18 1 44.0	7.536
7	4 13 32.50	2.0130	18 9 13.9	7.460
8	4 15 33.38	2.0163	18 16 39.2	7.383
9	4 17 34.47	2.0198	18 23 59.9	7.305
10	4 19 35.77	2.0233	18 31 16.0	7.227
11	4 21 37.28	2.0268	18 38 27.4	7.148
12	4 23 39.00	2.0303	18 45 34.0	7.068
13	4 25 40.93	2.0337	18 52 35.7	6.988
14	4 27 43.06	2.0372	18 59 32.6	6.907
15	4 29 45.40	2.0407	19 6 24.6	6.825
16	4 31 47.95	2.0443	19 13 11.7	6.743
17	4 33 50.72	2.0479	19 19 53.9	6.660
18	4 35 53.71	2.0516	19 26 31.1	6.577
19	4 37 56.92	2.0552	19 33 3.3	6.493
20	4 40 0.34	2.0588	19 39 30.4	6.408
21	4 42 3.98	2.0624	19 45 52.3	6.323
22	4 44 7.83	2.0660	19 52 9.0	6.237
23	4 46 11.90	2.0696	19 58 20.6	6.150
24	4 48 16.18	2.0732	N.20 4 27.0	6.062

TUESDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 48 16.18	2.0732	N.20 4 27.0	6.062
1	4 50 20.68	2.0769	20 10 28.1	5.973
2	4 52 25.40	2.0805	20 16 23.8	5.884
3	4 54 30.34	2.0840	20 22 14.1	5.794
4	4 56 35.49	2.0875	20 27 59.0	5.703
5	4 58 40.85	2.0912	20 33 38.4	5.612
6	5 0 46.43	2.0948	20 39 12.5	5.520
7	5 2 52.23	2.0984	20 44 40.9	5.428
8	5 4 58.24	2.1020	20 50 3.8	5.335
9	5 7 4.46	2.1056	20 55 21.1	5.242
10	5 9 10.90	2.1092	21 0 32.8	5.147
11	5 11 17.55	2.1128	21 5 38.8	5.052
12	5 13 24.42	2.1163	21 10 39.0	4.956
13	5 15 31.51	2.1199	21 15 33.5	4.860
14	5 17 38.81	2.1235	21 20 22.2	4.763
15	5 19 46.32	2.1270	21 25 5.0	4.665
16	5 21 54.04	2.1305	21 29 41.9	4.566
17	5 24 1.97	2.1340	21 34 12.9	4.467
18	5 26 10.11	2.1375	21 38 37.9	4.367
19	5 28 18.46	2.1409	21 42 56.9	4.267
20	5 30 27.01	2.1443	21 47 9.9	4.166
21	5 32 35.77	2.1477	21 51 16.8	4.064
22	5 34 44.73	2.1510	21 55 17.6	3.962
23	5 36 53.89	2.1544	N.21 59 12.2	3.859

WEDNESDAY, FEBRUARY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 39 3.26	2.1578	N.22 3 0.7	3.756

PHASES OF THE MOON.

		d	h	m
○	Full Moon, . . .	6	9	23.6
☾	Last Quarter, . .	13	18	57.0
●	New Moon, . .	20	12	31.8
☽	First Quarter, . .	28	1	14.4

		d	h
☾	Apogee, ...	1	16.5
☾	Perigee, ...	17	18.2
☾	Apogee	19	12.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	120° 40′ 38″	3470	122° 1′ 36″	3471	123° 22′ 33″	3471	124° 43′ 30″	3471
	Fomalhaut	W.	69 12 36	3299	70 36 49	3295	72 1 6	3292	73 25 27	3288
	α Pegasi	W.	54 29 46	3716	55 46 16	3694	57 3 9	3676	58 20 22	3655
	Jupiter	E.	37 37 27	3041	36 8 5	3042	34 38 44	3043	33 9 24	3043
	Pollux	E.	70 43 22	3103	69 15 16	3105	67 47 12	3105	66 19 8	3105
	Regulus	E.	106 32 36	3089	105 4 13	3089	103 35 50	3088	102 7 26	3087
2	Sun	W.	131 28 28	3463	132 49 34	3461	134 10 42	3457	135 31 54	3453
	Fomalhaut	W.	80 28 15	3270	81 53 2	3267	83 17 52	3262	84 42 48	3259
	α Pegasi	W.	64 51 17	3575	66 10 19	3562	67 29 35	3549	68 49 5	3535
	Pollux	E.	58 58 46	3102	57 30 39	3101	56 2 30	3098	54 34 18	3096
	Regulus	E.	94 45 12	3081	93 16 39	3079	91 48 4	3076	90 19 25	3073
3	α Pegasi	W.	75 29 59	3480	76 50 46	3469	78 11 45	3460	79 32 54	3449
	α Arietis	W.	31 56 24	3591	33 15 8	3544	34 34 44	3503	35 55 5	3464
	Pollux	E.	47 12 41	3084	45 44 12	3082	44 15 40	3078	42 47 4	3077
	Regulus	E.	82 55 5	3052	81 25 57	3047	79 56 43	3043	78 27 23	3038
	Mars	E.	116 14 35	3174	114 47 55	3168	113 21 8	3163	111 54 15	3158
4	α Pegasi	W.	86 21 16	3408	87 43 24	3400	89 5 41	3393	90 28 6	3386
	α Arietis	W.	42 46 24	3317	44 10 16	3294	45 34 34	3272	46 59 18	3252
	Pollux	E.	35 23 17	3064	33 54 23	3063	32 25 28	3062	30 56 32	3062
	Regulus	E.	70 59 1	3008	69 28 58	3002	67 58 48	2995	66 28 29	2989
	Mars	E.	104 37 56	3124	103 10 16	3117	101 42 27	3110	100 14 29	3102
5	α Arietis	W.	54 8 42	3163	55 35 36	3146	57 2 50	3132	58 30 21	3117
	Aldebaran	W.	21 34 56	2974	23 5 41	2963	24 36 40	2952	26 7 53	2942
	Regulus	E.	58 54 45	2953	57 23 33	2046	55 52 12	2939	54 20 43	2931
	Mars	E.	92 52 19	3063	91 23 24	3054	89 54 18	3047	88 25 4	3038
	Spica	E.	112 50 22	2982	111 19 47	2973	109 49 1	2965	108 18 5	2957
6	α Arietis	W.	65 52 11	3051	67 21 21	3039	68 50 45	3027	70 20 24	3015
	Aldebaran	W.	33 47 10	2893	35 19 38	2883	36 52 18	2873	38 25 11	2866
	Jupiter	W.	22 59 59	2852	24 33 19	2842	26 6 53	2832	27 40 39	2824
	Regulus	E.	46 40 50	2894	45 8 23	2886	43 35 46	2879	42 3 0	2872
	Mars	E.	80 56 9	2995	79 25 50	2985	77 55 19	2977	76 24 38	2969
	Spica	E.	100 40 42	2913	99 8 40	2905	97 36 28	2896	96 4 4	2888
7	α Arietis	W.	77 52 7	2962	79 23 7	2951	80 54 21	2942	82 25 46	2934
	Aldebaran	W.	46 12 26	2820	47 46 28	2811	49 20 41	2803	50 55 5	2794
	Jupiter	W.	35 32 21	2780	37 7 15	2771	38 42 21	2763	40 17 37	2754
	Regulus	E.	34 16 54	2838	32 43 15	2831	31 9 28	2825	29 35 33	2821
	Mars	E.	68 48 27	2924	67 16 39	2916	65 44 41	2907	64 12 31	2898
	Spica	E.	88 19 26	2846	86 45 58	2838	85 12 19	2829	83 38 29	2821
8	α Arietis	W.	90 5 46	2889	91 38 19	2880	93 11 2	2873	94 43 56	2866
	Aldebaran	W.	58 49 59	2750	60 25 32	2742	62 1 16	2733	63 37 12	2725
	Jupiter	W.	48 16 49	2713	49 53 12	2704	51 29 47	2696	53 6 32	2688
	Mars	E.	56 28 52	2855	54 55 35	2845	53 22 6	2838	51 48 28	2828
	Spica	E.	75 46 43	2781	74 11 50	2774	72 36 48	2766	71 1 35	2759
9	Aldebaran	W.	71 39 37	2683	73 16 40	2675	74 53 54	2666	76 31 19	2658
	Jupiter	W.	61 13 3	2646	62 50 55	2639	64 28 57	2630	66 7 11	2622
	Pollux	W.	27 50 22	2769	29 25 30	2753	31 0 59	2744	32 36 50	2722
	Mars	E.	43 57 25	2786	42 22 39	2779	40 47 43	2770	39 12 36	2762

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	126° 4′ 27″	3470	127° 25′ 25″	3469	128° 46′ 24″	3467	130° 7′ 25″	3465
	Fomalhaut	W.	74 49 52	3284	76 14 22	3282	77 38 55	3277	79 3 33	3274
	α Pegasi	W.	59 37 57	3638	60 55 50	3621	62 14 2	3605	63 32 31	3589
	Jupiter	E.	31 40 4	3043	30 10 44	3042	28 41 23	3042	27 12 2	3041
	Pollux	E.	64 51 4	3105	63 23 0	3105	61 54 57	3104	60 26 52	3103
	Regulus	E.	100 39 1	3087	99 10 35	3087	97 42 9	3085	96 13 41	3084
2	Sun	W.	136 53 11	3450	138 14 31	3446	139 35 56	3442	140 57 25	3438
	Fomalhaut	W.	86 7 49	3254	87 32 54	3249	88 58 5	3246	90 23 20	3242
	α Pegasi	W.	70 8 50	3523	71 28 49	3512	72 49 0	3501	74 9 23	3489
	Pollux	E.	53 6 4	3095	51 37 48	3091	50 9 28	3090	48 41 6	2942
	Regulus	E.	88 50 42	3069	87 21 55	3065	85 53 3	3061	84 24 6	3058
3	α Pegasi	W.	80 54 15	3440	82 15 46	3432	33 37 26	3423	84 59 17	3415
	α Arietis	W.	37 16 9	3431	38 37 51	3398	40 0 10	3369	41 23 2	3343
	Pollux	E.	41 18 26	3073	39 49 43	3070	38 20 57	3068	36 52 8	3066
	Regulus	E.	76 57 57	3032	75 28 24	3026	73 58 44	3020	72 28 56	3014
	Mars	E.	110 27 15	3150	109 0 6	3140	107 32 52	3138	106 5 28	3131
4	α Pegasi	W.	91 50 38	3379	93 13 18	3373	94 36 5	3368	95 58 58	3363
	α Arietis	W.	48 24 26	3231	49 49 58	3213	51 15 52	3195	52 42 7	3178
	Pollux	E.	29 27 36	3063	27 58 41	3066	26 29 50	3069	25 1 3	3074
	Regulus	E.	64 58 2	2981	63 27 26	2974	61 56 41	2967	60 25 47	2961
	Mars	E.	98 46 22	3094	97 18 5	3087	95 49 40	3078	94 21 4	3071
5	α Arietis	W.	59 58 10	3103	61 26 16	3090	62 54 38	3076	64 23 17	3064
	Aldebaran	W.	27 39 19	2931	29 10 59	2922	30 42 50	2912	32 14 54	2902
	Regulus	E.	52 49 3	2924	51 17 14	2916	49 45 16	2909	48 13 8	2901
	Mars	E.	86 55 38	3030	85 26 2	3021	83 56 15	3012	82 26 17	3004
	Spica	E.	106 46 58	2948	105 15 40	2940	103 44 12	2931	102 12 32	2923
6	α Arietis	W.	71 50 18	3005	73 20 25	2993	74 50 46	2984	76 21 19	2972
	Aldebaran	W.	39 58 14	2855	41 31 30	2847	43 4 57	2838	44 38 36	2829
	Jupiter	W.	29 14 36	2814	30 48 46	2806	32 23 6	2797	33 57 38	2788
	Regulus	E.	40 30 5	2864	38 57 0	2858	37 23 47	2851	35 50 25	2844
	Mars	E.	74 53 46	2960	73 22 43	2951	71 51 29	2942	70 20 3	2934
	Spica	E.	94 31 30	2880	92 58 45	2872	91 25 50	2863	89 52 44	2854
7	α Arietis	W.	83 57 22	2924	85 29 11	2914	87 1 12	2906	88 33 23	2897
	Aldebaran	W.	52 29 41	2785	54 4 29	2776	55 39 28	2769	57 14 37	2759
	Jupiter	W.	41 53 5	2746	43 28 44	2737	45 4 35	2729	46 40 36	2720
	Regulus	E.	28 1 33	2816	26 27 26	2812	24 53 14	2808	23 18 57	2806
	Mars	E.	62 40 9	2890	61 7 37	2880	59 34 53	2872	58 1 58	2863
	Spica	E.	82 4 29	2813	80 30 18	2805	78 55 56	2798	77 21 25	2789
8	α Arietis	W.	96 16 58	2858	97 50 11	2852	99 23 32	2844	100 57 3	2837
	Aldebaran	W.	65 13 19	2716	66 49 37	2709	68 26 5	2699	70 2 46	2692
	Jupiter	W.	54 43 28	2680	56 20 35	2672	57 57 53	2663	59 35 23	2655
	Mars	E.	50 14 37	2820	48 40 35	2812	47 6 23	2803	45 31 59	2795
	Spica	E.	69 26 13	2750	67 50 40	2744	66 14 58	2736	64 39 6	2729
9	Aldebaran	W.	78 8 55	2649	79 46 44	2642	81 24 42	2632	83 2 53	2625
	Jupiter	W.	67 45 36	2614	69 24 12	2606	71 2 59	2598	72 41 57	2590
	Pollux	W.	34 13 0	2711	35 49 29	2692	37 26 15	2683	39 3 18	2671
	Mars	E.	37 37 18	2754	36 1 50	2745	34 26 10	2739	32 50 22	2731

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	Spica	E.	63° 3′ 5″	2729	61° 26′ 53″	2715	59° 50′ 33″	2709	58° 14′ 5″	2701
10	Aldebaran	W.	84 41 15	2616	86 19 48	2608	87 58 32	2599	89 37 28	2591
	Jupiter	W.	74 21 6	2581	76 0 27	2574	77 39 58	2565	79 19 41	2556
	Pollux	W.	40 40 37	2659	42 18 12	2647	43 56 3	2637	45 34 8	2627
	Spica	E.	50 9 31	2672	48 32 13	2666	46 54 48	2662	45 17 17	2657
	Antares	E.	96 1 17	2647	94 23 26	2638	92 45 23	2631	91 7 10	2622
	Sun	E.	137 27 55	2960	135 56 52	2953	134 25 40	2942	132 54 14	2934
11	Aldebaran	W.	97 54 59	2549	99 35 4	2540	101 15 21	2532	102 55 50	2524
	Jupiter	W.	87 41 8	2515	89 22 0	2507	91 3 4	2499	92 44 18	2490
	Pollux	W.	53 48 4	2575	55 27 33	2566	57 7 15	2556	58 47 11	2547
	Spica	E.	37 8 25	2643	35 30 29	2643	33 52 33	2646	32 14 41	2648
	Antares	E.	82 53 12	2580	81 13 50	2572	79 34 17	2564	77 54 33	2556
	Sun	E.	125 14 17	2888	123 41 43	2878	122 8 56	2869	120 35 58	2860
12	Jupiter	W.	101 13 31	2448	102 55 57	2439	104 38 36	2431	106 21 26	2422
	Pollux	W.	67 10 4	2499	68 51 18	2490	70 32 45	2481	72 14 25	2472
	Regulus	W.	31 16 27	2504	32 57 35	2493	34 38 58	2482	36 20 37	2470
	Antares	E.	69 33 6	2516	67 52 15	2509	66 11 14	2502	64 30 3	2494
	Sun	E.	112 48 8	2813	111 13 57	2805	109 39 35	2795	108 5 1	2785
13	Pollux	W.	80 45 59	2426	82 28 57	2417	84 12 8	2408	85 55 31	2398
	Regulus	W.	44 52 34	2420	46 35 40	2410	48 19 0	2401	50 2 33	2391
	Antares	E.	56 1 29	2458	54 19 16	2452	52 36 55	2445	50 54 24	2439
	Sun	E.	100 8 58	2738	98 33 8	2728	96 57 5	2718	95 20 49	2709
14	Pollux	W.	94 35 40	2355	96 20 20	2346	98 5 12	2338	99 50 16	2330
	Regulus	W.	58 43 44	2345	60 28 38	2335	62 13 46	2327	63 59 6	2318
	Mars	W.	22 8 8	2441	23 50 44	2428	25 33 39	2417	27 16 50	2405
	Antares	E.	42 19 56	2417	40 36 45	2413	38 53 29	2412	37 10 12	2411
	Sun	E.	87 16 20	2661	85 38 48	2652	84 1 3	2643	82 23 7	2634
15	Regulus	W.	72 48 57	2277	74 35 31	2268	76 22 18	2260	78 9 16	2253
	Mars	W.	35 56 35	2355	37 41 14	2346	39 26 6	2337	41 11 11	2328
	Spica	W.	19 54 0	2559	21 33 52	2509	23 14 53	2468	24 56 51	2433
	Saturn	E.	52 54 9	2302	51 8 12	2294	49 22 4	2286	47 35 44	2279
	Sun	E.	74 10 21	2590	72 31 12	2582	70 51 52	2574	69 12 21	2566
16	Regulus	W.	87 6 46	2218	88 54 46	2212	90 42 55	2207	92 31 12	2202
	Mars	W.	49 59 34	2291	51 45 47	2284	53 32 10	2277	55 18 43	2272
	Spica	W.	33 36 58	2320	35 22 28	2304	37 8 21	2291	38 54 33	2279
	Saturn	E.	38 41 27	2245	36 54 6	2238	35 6 35	2234	33 18 58	2227
	Sun	E.	60 52 7	2530	59 11 36	2523	57 30 55	2517	55 50 5	2512
17	Mars	W.	64 13 27	2247	66 0 45	2243	67 48 8	2240	69 35 36	2237
	Spica	W.	47 49 35	2233	49 37 13	2227	51 25 1	2220	53 12 58	2216
	Saturn	E.	24 18 54	2206	22 30 35	2202	20 42 11	2200	18 53 43	2198
	Sun	E.	47 24 14	2489	45 42 46	2487	44 1 14	2484	42 19 38	2482
18	Mars	W.	78 33 46	2230	80 21 29	2231	82 9 11	2231	83 56 53	2231
	Spica	W.	62 14 7	2202	64 2 32	2201	65 50 58	2201	67 39 24	2201
	Antares	W.	17 17 24	2559	18 57 15	2492	20 38 39	2441	22 21 15	2402
	Sun	E.	33 51 6	2479	32 9 23	2480	30 27 41	2482	28 46 2	2485

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L of Diff.	XXIh.	P. L. of Diff.
9	Spica	E.	56° 37′ 27″	2695	55° 0′ 40″	2689	53° 23′ 45″	2684	51° 46′ 43″	2676
10	Aldebaran	W.	91 16 35	2583	92 55 54	2574	94 35 24	2566	96 15 6	2558
	Jupiter	W.	80 59 36	2548	82 39 42	2540	84 19 59	2532	86 0 28	2524
	Pollux	W.	47 12 26	2615	48 51 0	2605	50 29 48	2595	52 8 50	2586
	Spica	E.	43 39 40	2653	42 1 57	2649	40 24 9	2648	38 46 19	2645
	Antares	E.	89 28 45	2614	87 50 9	2605	86 11 21	2596	84 32 23	2588
	Sun	E.	131 22 38	2924	129 50 49	2916	128 18 51	2905	126 46 39	2896
11	Aldebaran	W.	104 36 30	2515	106 17 23	2507	107 58 27	2498	109 39 43	2489
	Jupiter	W.	94 25 45	2482	96 7 24	2474	97 49 14	2465	99 31 16	2456
	Pollux	W.	60 27 19	2537	62 7 41	2528	63 48 15	2517	65 29 4	2510
	Spica	E.	30 36 51	2653	28 59 8	2660	27 21 34	2671	25 44 15	2686
	Antares	E.	76 14 37	2548	74 34 31	2540	72 54 13	2533	71 13 46	2524
	Sun	E.	119 2 48	2851	117 29 26	2842	115 55 53	2831	114 22 6	2823
12	Jupiter	W.	108 4 29	2414	109 47 44	2405	111 31 12	2396	113 14 52	2387
	Pollux	W.	73 56 18	2462	75 38 24	2453	77 20 44	2445	79 3 15	2436
	Regulus	W.	38 2 32	2460	39 44 41	2450	41 27 4	2440	43 9 42	2430
	Antares	E.	62 48 41	2486	61 7 8	2479	59 25 25	2471	57 43 31	2465
	Sun	E.	106 30 13	2775	104 55 13	2766	103 20 0	2757	101 44 36	2747
13	Pollux	W.	87 39 8	2390	89 22 57	2381	91 6 59	2373	92 51 13	2364
	Regulus	W.	51 46 20	2382	53 30 20	2372	55 14 35	2363	56 59 3	2354
	Antares	E.	49 11 45	2433	47 28 58	2428	45 46 3	2424	44 3 3	2419
	Sun	E.	93 44 21	2696	92 7 39	2689	90 30 45	2681	88 53 39	2671
14	Pollux	W.	101 35 32	2322	103 21 0	2313	105 6 40	2306	106 52 31	2298
	Regulus	W.	65 44 39	2309	67 30 25	2301	69 16 23	2292	71 2 34	2284
	Mars	W.	29 0 17	2394	30 44 0	2384	32 27 57	2374	34 12 9	2364
	Antares	E.	35 26 53	2412	33 43 36	2415	32 0 23	2420	30 17 17	2427
	Sun	E.	80 44 58	2624	79 6 35	2616	77 28 2	2608	75 49 18	2599
15	Regulus	W.	79 56 25	2246	81 43 44	2238	83 31 15	2232	85 18 55	2225
	Mars	W.	42 56 29	2321	44 41 58	2313	46 27 39	2305	48 13 31	2298
	Spica	W.	26 39 39	2403	28 23 9	2379	30 7 14	2356	31 51 52	2337
	Saturn	E.	45 49 14	2271	44 2 32	2265	42 15 41	2258	40 28 39	2251
	Sun	E.	67 32 39	2558	65 52 46	2551	64 12 43	2543	62 32 30	2536
16	Regulus	W.	94 19 37	2197	96 8 9	2192	97 56 49	2188	99 45 35	2184
	Mars	W.	57 5 24	2266	58 52 14	2261	60 39 11	2256	62 26 16	2251
	Spica	W.	40 41 4	2268	42 27 51	2258	44 14 53	2249	46 2 8	2241
	Saturn	E.	31 31 10	2223	29 43 16	2218	27 55 16	2213	26 7 8	2209
	Sun	E.	54 9 9	2507	52 28 5	2502	50 46 54	2497	49 5 37	2493
17	Mars	W.	71 23 8	2235	73 10 44	2233	74 58 23	2231	76 46 4	2231
	Spica	W.	55 1 1	2212	56 49 11	2209	58 37 25	2206	60 25 44	2203
	Saturn	E.	17 5 12	2195	15 16 37	2194	13 28 1	2194	11 39 24	2193
	Sun	E.	40 37 59	2480	38 56 18	2478	37 14 34	2478	35 32 50	2478
18	Mars	W.	85 44 34	2233	87 32 12	2236	89 19 46	2238	91 7 17	2241
	Spica	W.	69 27 50	2202	71 16 14	2204	73 4 36	2206	74 52 54	2209
	Antares	W.	24 4 47	2372	25 49 2	2349	27 33 50	2331	29 19 5	2317
	Sun	E.	27 4 27	2487	25 22 56	2492	23 41 31	2498	22 0 15	2504

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
22	Sun	W.	19° 28′ 40″	2773	21° 3′ 43″	2787	22° 38′ 28″	2801	24° 12′ 55″	2816
	α Pegasi	E.	37 39 15	3800	36 24 13	3934	35 11 28	4085	34 1 12	4253
	α Arietis	E.	75 28 54	2576	73 49 26	2594	72 10 23	2612	70 31 45	2631
	Jupiter	E.	115 39 6	2404	113 55 37	2419	112 12 29	2434	110 29 43	2449
23	Sun	W.	32 0 3	2898	33 32 25	2915	35 4 25	2931	36 36 4	2949
	α Arietis	E.	62 25 10	2734	60 49 15	2756	59 13 50	2780	57 38 56	2803
	Aldebaran	E.	92 42 39	2551	91 2 37	2567	89 22 57	2584	87 43 40	2600
	Jupiter	E.	102 1 23	2530	100 20 51	2545	98 40 41	2562	97 0 54	2578
24	Sun	W.	44 8 50	3036	45 38 18	3052	47 7 26	3070	48 36 12	3087
	α Arietis	E.	49 52 27	2935	48 20 53	2963	46 49 54	2995	45 19 35	3027
	Aldebaran	E.	79 32 48	2682	77 55 44	2698	76 19 2	2714	74 42 41	2730
	Jupiter	E.	88 47 34	2660	87 10 0	2677	85 32 49	2692	83 55 58	2708
25	Sun	W.	55 54 55	3170	57 21 40	3186	58 48 6	3201	60 14 14	3216
	Fomalhaut	W.	32 12 8	3541	33 31 47	3496	34 52 16	3459	36 13 26	3428
	α Arietis	E.	37 58 37	3219	36 32 50	3265	35 7 57	3315	33 44 3	3371
	Aldebaran	E.	66 46 7	2807	65 11 48	2822	63 37 49	2836	62 4 8	2850
	Jupiter	E.	75 57 0	2785	74 22 12	2800	72 47 44	2815	71 13 35	2828
26	Sun	W.	67 20 32	3288	68 44 58	3300	70 9 9	3313	71 33 6	3325
	Fomalhaut	W.	43 6 25	3333	44 29 58	3323	45 53 43	3314	47 17 38	3306
	α Pegasi	W.	32 36 40	4748	33 36 59	4614	34 39 12	4498	35 43 6	4395
	Aldebaran	E.	54 20 10	2917	52 48 13	2929	51 16 31	2941	49 45 4	2953
	Jupiter	E.	63 27 16	2894	61 54 50	2907	60 22 40	2918	58 50 44	2931
27	Sun	W.	78 29 27	3379	79 52 7	3388	81 14 37	3399	82 36 55	3407
	Fomalhaut	W.	54 18 50	3288	55 43 16	3287	57 7 43	3284	58 32 13	3283
	α Pegasi	W.	41 22 41	4036	42 33 45	3986	43 45 38	3942	44 58 15	3901
	Jupiter	E.	51 14 34	2981	49 43 58	2989	48 13 32	2998	46 43 17	3005
	Pollux	E.	86 27 20	3015	84 57 26	3023	83 27 42	3031	81 58 8	3040
28	Sun	W.	89 26 18	3441	90 47 48	3446	92 9 12	3450	93 30 32	3455
	Fomalhaut	W.	65 34 52	3282	66 59 24	3281	68 23 58	3282	69 48 31	3280
	α Pegasi	W.	51 10 24	3751	52 26 17	3728	53 42 34	3708	54 59 13	3687
	Jupiter	E.	39 14 19	3039	37 44 55	3045	36 15 38	3048	34 46 25	3054
	Pollux	E.	74 32 37	3073	73 3 54	3078	71 35 17	3081	70 6 44	3087
29	Sun	W.	100 16 8	3469	101 37 7	3469	102 58 6	3469	104 19 5	3470
	α Pegasi	W.	61 27 13	3609	62 45 38	3596	64 4 17	3583	65 23 10	3571
	Pollux	E.	62 45 13	3101	61 17 5	3102	59 48 58	3103	58 20 52	3105
	Regulus	E.	98 33 26	3082	97 4 55	3083	95 36 25	3083	94 7 55	3083
30	Sun	W.	111 4 8	3462	112 25 15	3459	113 46 25	3455	115 7 39	3451
	α Pegasi	W.	72 0 43	3517	73 20 48	3506	74 41 5	3497	76 1 32	3488
	α Arietis	W.	28 35 48	3746	29 51 47	3684	31 8 51	3630	32 26 53	3582
	Pollux	E.	51 0 30	3102	49 32 23	3101	48 4 15	3100	46 36 5	3097
	Regulus	E.	86 45 11	3075	85 16 31	3073	83 47 48	3069	82 19 0	3065
31	Sun	W.	121 55 7	3425	123 16 55	3418	124 38 51	3411	126 0 55	3404
	α Pegasi	W.	82 46 22	3444	84 7 49	3435	85 29 26	3426	86 51 13	3418
	α Arietis	W.	39 8 43	3409	40 31 0	3372	41 53 49	3345	43 17 8	3321
	Pollux	E.	39 14 34	3086	37 46 7	3083	36 17 37	3081	34 49 4	3079
	Regulus	E.	74 53 44	3040	73 24 21	3034	71 54 51	3028	70 25 13	3021

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
22	Sun	W.	25° 47′ 2″	2832	27° 20′ 48″	2848	28° 54′ 14″	2863	30° 27′ 20″	2881
	α Pegasi	E.	32 53 36	4448	31 48 58	4666	30 47 30	4920	29 49 31	5210
	α Arietis	E.	68 53 32	2650	67 15 45	2671	65 38 26	2690	64 1 33	2713
	Jupiter	E.	108 47 18	2465	107 5 15	2482	105 23 36	2497	103 42 18	2513
23	Sun	W.	38 7 21	2967	39 38 15	2984	41 8 48	3000	42 39 1	3019
	α Arietis	E.	56 4 32	2826	54 30 41	2853	52 57 22	2880	51 24 37	2907
	Aldebaran	E.	86 4 45	2617	84 26 13	2632	82 48 2	2649	81 10 14	2666
	Jupiter	E.	95 21 29	2595	93 42 27	2612	92 3 48	2627	90 25 30	2643
24	Sun	W.	50 4 37	3104	51 32 42	3120	53 0 27	3138	54 27 51	3154
	α Arietis	E.	43 49 56	3061	42 20 59	3096	40 52 45	3133	39 25 16	3175
	Aldebaran	E.	73 6 41	2746	71 31 2	2762	69 55 44	2776	68 20 45	2792
	Jupiter	E.	82 19 29	2724	80 43 21	2739	79 7 33	2756	77 32 7	2770
25	Sun	W.	61 40 4	3231	63 5 36	3245	64 30 52	3260	65 55 50	3274
	Fomalhaut	W.	37 35 11	3402	38 57 25	3379	40 20 5	3361	41 43 6	3345
	α Arietis	E.	32 21 13	3432	30 59 33	3499	29 39 8	3576	28 20 7	3692
	Aldebaran	E.	60 30 45	2865	58 57 41	2878	57 24 54	2891	55 52 24	2904
	Jupiter	E.	69 39 44	2843	68 6 12	2855	66 32 56	2869	64 59 57	2883
26	Sun	W.	72 56 48	3338	74 20 16	3347	75 43 33	3360	77 6 35	3369
	Fomalhaut	W.	48 41 42	3301	50 5 52	3297	51 30 7	3293	52 54 27	3290
	α Pegasi	W.	36 48 32	4304	37 55 21	4226	39 3 23	4155	40 12 32	4092
	Aldebaran	E.	48 13 52	2964	46 42 54	2974	45 12 9	2986	43 41 39	2996
	Jupiter	E.	57 19 4	2941	55 47 37	2952	54 16 24	2961	52 45 22	2972
27	Sun	W.	83 59 4	3415	85 21 4	3422	86 42 56	3428	88 4 41	3435
	Fomalhaut	W.	59 56 44	3283	61 21 15	3282	62 45 47	3282	64 10 19	3282
	α Pegasi	W.	46 11 34	3865	47 25 29	3833	48 39 57	3803	49 54 56	3775
	Jupiter	E.	45 13 11	3014	43 43 16	3021	42 13 29	3027	40 43 50	3034
	Pollux	E.	80 28 45	3047	78 59 30	3055	77 30 25	3060	76 1 27	3067
28	Sun	W.	94 51 46	3459	96 12 56	3462	97 34 3	3464	98 55 7	3468
	Fomalhaut	W.	71 13 6	3280	72 37 41	3280	74 2 16	3279	75 26 52	3278
	α Pegasi	W.	56 16 14	3671	57 33 32	3653	58 51 9	3637	60 9 3	3623
	Jupiter	E.	33 17 19	3058	31 48 18	3061	30 19 21	3065	28 50 28	3068
	Pollux	E.	68 38 18	3091	67 9 57	3093	65 41 39	3096	64 13 24	3099
29	Sun	W.	105 40 3	3470	107 1 1	3468	108 22 1	3465	109 43 4	3464
	α Pegasi	W.	66 42 16	3559	68 1 35	3548	69 21 6	3538	70 40 48	3528
	Pollux	E.	56 52 48	3105	55 24 44	3105	53 56 40	3104	52 28 35	3104
	Regulus	E.	92 39 25	3083	91 10 55	3081	89 42 22	3080	88 13 48	3078
30	Sun	W.	116 28 58	3446	117 50 22	3443	119 11 50	3437	120 33 25	3431
	α Pegasi	W.	77 22 10	3479	78 42 58	3470	80 3 56	3460	81 25 5	3453
	α Arietis	W.	33 45 47	3538	35 5 29	3498	36 25 55	3463	37 47 1	3431
	Pollux	E.	45 7 52	3096	43 39 37	3093	42 11 19	3091	40 42 58	3088
	Regulus	E.	80 50 8	3061	79 21 11	3057	77 52 9	3052	76 23 0	3046
31	Sun	W.	127 23 7	3396	128 45 28	3388	130 7 58	3380	131 30 37	3372
	α Pegasi	W.	88 13 9	3410	89 35 14	3402	90 57 28	3394	92 19 51	3388
	α Arietis	W.	44 40 55	3297	46 5 10	3276	47 29 50	3254	48 54 55	3234
	Pollux	E.	33 20 29	3077	31 51 51	3076	30 23 12	3076	28 54 33	3073
	Regulus	E.	68 55 26	3014	67 25 30	3006	65 55 25	3000	64 25 12	2990

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	THE SUN'S Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Wed.	1	20 58 52.33	10.189	S. 17 8 7.0	+42.62	16 16.02	68.28	13 49.81	0.332
Thur.	2	21 2 56.43	10.154	16 50 55.4	43.36	16 15.87	68.17	13 57.33	0.297
Frid.	3	21 6 59.70	10.118	16 33 26.2	44.08	16 15.71	68.05	14 4.02	0.262
Sat.	4	21 11 2.14	10.083	16 15 39.8	44.78	16 15.55	67.94	14 9.89	0.227
Sun.	5	21 15 3.75	10.049	15 57 36.7	45.48	16 15.40	67.82	14 14.94	0.193
Mon.	6	21 19 4.54	10.015	15 39 17.1	46.15	16 15.23	67.71	14 19.17	0.159
Tues.	7	21 23 4.54	9.982	15 20 41.6	46.81	16 15.05	67.59	14 22.60	0.126
Wed.	8	21 27 3.75	9.950	15 1 50.6	47.45	16 14.87	67.48	14 25.25	0.094
Thur.	9	21 31 2.18	9.918	14 42 44.3	48.08	16 14.69	67.36	14 27.12	0.062
Frid.	10	21 34 59.83	9.886	14 23 23.2	48.69	16 14.50	67.25	14 28.21	0.030
Sat.	11	21 38 56.71	9.855	14 3 47.8	49.28	16 14.31	67.14	14 28.53	0.001
Sun.	12	21 42 52.84	9.824	13 43 58.3	49.85	16 14.11	67.03	14 28.11	0.032
Mon.	13	21 46 48.23	9.793	13 23 55.2	50.41	16 13.91	66.92	14 26.95	0.063
Tues.	14	21 50 42.89	9.762	13 3 39.0	50.94	16 13.71	66.81	14 25.06	0.093
Wed.	15	21 54 36.82	9.732	12 43 10.0	51.46	16 13.50	66.71	14 22.45	0.123
Thur.	16	21 58 30.04	9.702	12 22 28.8	51.97	16 13.29	66.61	14 19.12	0.153
Frid.	17	22 2 22.55	9.673	12 1 35.6	52.45	16 13.07	66.51	14 15.10	0.182
Sat.	18	22 6 14.36	9.644	11 40 31.0	52.92	16 12.87	66.41	14 10.37	0.211
Sun.	19	22 10 5.48	9.616	11 19 15.3	53.38	16 12.65	66.31	14 4.95	0.239
Mon.	20	22 13 55.93	9.588	10 57 49.0	53.82	16 12.43	66.21	13 58.85	0.267
Tues.	21	22 17 45.71	9.561	10 36 12.4	54.24	16 12.21	66.12	13 52.09	0.294
Wed.	22	22 21 34.84	9.534	10 14 25.9	54.63	16 11.99	66.02	13 44.68	0.321
Thur.	23	22 25 23.32	9.507	9 52 30.1	55.01	16 11.77	65.93	13 36.64	0.348
Frid.	24	22 29 11.17	9.480	9 30 25.6	55.38	16 11.55	65.84	13 27.96	0.375
Sat.	25	22 32 58.40	9.455	9 8 12.5	55.72	16 11.32	65.76	13 18.66	0.400
Sun.	26	22 36 45.02	9.431	8 45 51.2	56.04	16 11.09	65.68	13 8.76	0.424
Mon.	27	22 40 31.06	9.407	8 23 22.3	56.36	16 10.86	65.60	12 58.28	0.448
Tues.	28	22 44 16.32	9.384	8 0 46.2	56.65	16 10.63	65.52	12 47.21	0.471
Wed.	29	22 48 1.44	9.361	S. 7 38 3.3	+56.92	16 10.39	65.43	12 35.62	0.494

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be subt'd from Mean Time.*	Diff. for 1 hour.	Sidereal Time, or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Wed.	1	20 58 49.97	10.188	S. 17 8 16.8	+42.61	13 49.73	0.332	20 45 0.24
Thur.	2	21 2 54.06	10.153	16 51 5.5	43.35	13 57.26	0.297	20 48 56.80
Frid.	3	21 6 57.32	10.118	16 33 36.6	44.07	14 3.96	0.262	20 52 53.36
Sat.	4	21 10 59.75	10.083	16 15 50.5	44.77	14 9.84	0.227	20 56 49.91
Sun.	5	21 15 1.36	10.049	15 57 47.5	45.47	14 14.89	0.193	21 0 46.47
Mon.	6	21 19 2.15	10.015	15 39 28.2	46.14	14 19.13	0.159	21 4 43.02
Tues.	7	21 23 2.15	9.982	15 20 52.9	46.80	14 22.57	0.126	21 8 39.58
Wed.	8	21 27 1.36	9.950	15 2 2.0	47.44	14 25.23	0.094	21 12 36.13
Thur.	9	21 30 59.79	9.918	14 42 56.0	48.07	14 27.10	0.062	21 16 32.69
Frid.	10	21 34 57.44	9.886	14 23 35.0	48.68	14 28.20	0.030	21 20 29.24
Sat.	11	21 38 54.33	9.855	14 3 59.7	49.27	14 28.53	0.001	21 24 25.80
Sun.	12	21 42 50.47	9.824	13 44 10.3	49.84	14 28.12	0.032	21 28 22.35
Mon.	13	21 46 45.87	9.793	13 24 7.4	50.40	14 26.97	0.063	21 32 18.90
Tues.	14	21 50 40.54	9.763	13 3 51.2	50.94	14 25.08	0.093	21 36 15.46
Wed.	15	21 54 34.49	9.733	12 43 22.3	51.46	14 22.48	0.123	21 40 12.01
Thur.	16	21 58 27.73	9.703	12 22 41.2	51.97	14 19.16	0.153	21 44 8.57
Frid.	17	22 2 20.26	9.674	12 1 48.1	52.45	14 15.14	0.182	21 48 5.12
Sat.	18	22 6 12.09	9.645	11 40 43.5	52.92	14 10.42	0.211	21 52 1.67
Sun.	19	22 10 3.23	9.617	11 19 27.8	53.38	14 5.00	0.239	21 55 58.23
Mon.	20	22 13 53.70	9.589	10 58 1.5	53.81	13 58.92	0.267	21 59 54.78
Tues.	21	22 17 43.50	9.562	10 36 24.9	54.24	13 52.16	0.294	22 3 51.34
Wed.	22	22 21 32.65	9.535	10 14 38.3	54.63	13 44.76	0.321	22 7 47.89
Thur.	23	22 25 21.17	9.508	9 52 42.5	55.01	13 36.73	0.348	22 11 44.44
Frid.	24	22 29 9.05	9.481	9 30 37.9	55.38	13 28.05	0.375	22 15 41.00
Sat.	25	22 32 56.30	9.456	9 8 24.8	55.72	13 18.75	0.400	22 19 37.55
Sun.	26	22 36 42.96	9.432	8 46 3.5	56.04	13 8.86	0.424	22 23 34.10
Mon.	27	22 40 29.03	9.408	8 23 34.5	56.36	12 58.37	0.448	22 27 30.66
Tues.	28	22 44 14.53	9.385	8 0 58.3	56.65	12 47.32	0.471	22 31 27.21
Wed.	29	22 47 59.49	9.362	S. 7 38 15.3	+56.93	12 35.73	0.494	22 35 23.76

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour $+9^s.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	32	312 14 50.7	15 2.1	152.11	−0.10	9.9937168	+26.9	3 14 27.80
2	33	313 15 40.8	15 52.1	152.06	+0.03	.9937825	27.9	3 10 31.90
3	34	314 16 29.6	16 40.8	152.01	0.16	.9938505	28.9	3 6 35.99
4	35	315 17 17.0	17 28.1	151.96	0.29	.9939209	29.9	3 2 40.08
5	36	316 18 3.4	18 14.7	151.91	0.41	.9939938	30.8	2 58 44.17
6	37	317 18 48.5	18 59.4	151.86	0.50	.9940691	31.8	2 54 48.26
7	38	318 19 32.4	19 43.1	151.81	0.56	.9941468	32.8	2 50 52.35
8	39	319 20 15.2	20 25.8	151.76	0.59	.9942267	33.7	2 46 56.44
9	40	320 20 56.8	21 7.4	151.71	0.58	.9943087	34.6	2 43 0.53
10	41	321 21 37.4	21 47.7	151.66	0.54	.9943929	35.4	2 39 4.62
11	42	322 22 16.7	22 26.9	151.61	0.48	.9944791	36.2	2 35 8.71
12	43	323 22 54.9	23 5.0	151.56	0.40	.9945670	36.9	2 31 12.80
13	44	324 23 32.0	23 42.0	151.51	0.31	.9946565	37.6	2 27 16.89
14	45	325 24 8.0	24 17.9	151.46	0.19	.9947475	38.2	2 23 20.99
15	46	326 24 42.8	24 52.6	151.42	+0.06	.9948398	38.7	2 19 25.08
16	47	327 25 16.1	25 25.8	151.37	−0.07	.9949333	39.2	2 15 29.17
17	48	328 25 48.2	25 57.7	151.31	0.20	.9950279	39.6	2 11 33.26
18	49	329 26 18.9	26 28.3	151.25	0.33	.9951234	39.9	2 7 37.36
19	50	330 26 48.1	26 57.4	151.18	0.44	.9952197	40.2	2 3 41.45
20	51	331 27 15.6	27 24.8	151.11	0.51	.9953169	40.5	1 59 45.54
21	52	332 27 41.3	27 50.4	151.04	0.56	.9954149	40.9	1 55 49.63
22	53	333 28 5.4	28 14.4	150.97	0.58	.9955136	41.2	1 51 53.72
23	54	334 28 27.7	28 36.6	150.89	0.58	.9956131	41.6	1 47 57.81
24	55	335 28 48.1	28 56.8	150.81	0.54	.9957134	42.0	1 44 1.90
25	56	336 29 6.5	29 15.1	150.72	0.48	.9958147	42.4	1 40 5.99
26	57	337 29 22.9	29 31.4	150.64	0.39	.9959170	42.8	1 36 10.09
27	58	338 29 37.2	29 45.6	150.55	0.28	.9960203	43.2	1 32 14.18
28	59	339 29 49.5	29 57.8	150.47	0.16	.9961247	43.7	1 28 18.27
29	60	340 29 59.7	30 7.9	150.38	−0.03	9.9962304	+44.3	1 24 22.36

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour $-9^s.8296$

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 56.0	14 59.3	54 41.5	+0.93	54 53.6	+1.07	9 12.6	2.09	11.5
2	15 3.0	15 7.0	55 7.2	1.19	55 22.0	1.28	10 3.7	2.16	12.5
3	15 11.3	15 15.9	55 37.9	1.36	55 54.5	1.40	10 55.9	2.19	13.5
4	15 20.5	15 25.2	56 11.6	1.43	56 28.7	1.43	11 48.4	2.18	14.5
5	15 29.8	15 34.4	56 45.8	1.41	57 2.6	1.37	12 40.3	2.14	15.5
6	15 38.8	15 42.9	57 18.7	1.31	57 34.0	1.24	13 30.9	2.09	16.5
7	15 46.9	15 50.5	57 48.4	1.16	58 1.7	1.07	14 20.5	2.04	17.5
8	15 53.8	15 56.8	58 14.0	0.97	58 25.1	0.88	15 9.3	2.03	18.5
9	15 59.5	16 2.0	58 35.0	0.78	58 43.8	0.69	15 58.1	2.04	19.5
10	16 4.0	16 5.8	58 51.5	0.59	58 58.1	0.50	16 47.9	2.10	20.5
11	16 7.3	16 8.6	59 3.6	0.42	59 8.2	0.33	17 39.4	2.20	21.5
12	16 9.5	16 10.2	59 11.7	0.25	59 14.1	+0.16	18 33.5	2.31	22.5
13	16 10.5	16 10.6	59 15.4	+0.06	59 15.6	−0.04	19 30.3	2.42	23.5
14	16 10.3	16 9.6	59 14.4	−0.16	59 11.8	0.28	20 29.2	2.49	24.5
15	16 8.4	16 6.9	59 7.7	0.41	59 2.0	0.55	21 29.0	2.48	25.5
16	16 4.9	16 2.4	58 54.6	0.69	58 45.4	0.84	22 27.8	2.40	26.5
17	15 59.4	15 56.0	58 34.4	0.98	58 21.8	1.12	23 23.9	2.27	27.5
18	15 52.1	15 47.8	58 7.5	1.25	57 51.8	1.37	6		28.5
19	15 43.1	15 38.2	57 34.8	1.46	57 16.8	1.53	0 16.8	2.13	29.5
20	15 33.1	15 28.0	56 58.1	1.58	56 39.0	1.60	1 6.1	1.99	0.9
21	15 22.7	15 17.6	56 19.8	1.59	56 1.0	1.55	1 52.5	1.88	1.9
22	15 12.6	15 8.0	55 42.8	1.48	55 25.5	1.39	2 36.8	1.81	2.9
23	15 3.6	14 59.7	55 9.6	1.27	54 55.2	1.12	3 19.7	1.77	3.9
24	14 56.3	14 53.4	54 42.7	0.96	54 32.2	0.78	4 2.3	1.78	4.9
25	14 51.2	14 49.6	54 24.0	0.59	54 18.1	−0.38	4 45.3	1.81	5.9
26	14 48.7	14 48.5	54 14.9	−0.17	54 14.2	+0.05	5 29.5	1.87	6.9
27	14 49.0	14 50.3	54 16.1	+0.27	54 20.7	0.49	6 15.5	1.95	7.9
28	14 52.2	14 54.9	54 27.8	0.70	54 37.5	0.91	7 3.5	2.03	8.9
29	14 58.2	15 2.1	54 49.6	1.10	55 4.0	1.28	7 53.3	2.11	9.9
30	15 6.5	15 11.5	55 20.4	+1.45	55 38.6	+1.58	8 44.8	2.17	10.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 39 3.26	2.1578	N.22 3 0.7	3.756
1	5 41 12.83	2.1612	22 6 43.0	3.652
2	5 43 22.60	2.1645	22 10 18.9	3.547
3	5 45 32.57	2.1678	22 13 48.5	3.441
4	5 47 42.73	2.1710	22 17 11.8	3.335
5	5 49 53.08	2.1742	22 20 28.7	3.229
6	5 52 3.62	2.1773	22 23 39.2	3.122
7	5 54 14.35	2.1804	22 26 43.3	3.015
8	5 56 25.27	2.1835	22 29 41.0	2.907
9	5 58 36.37	2.1865	22 32 32.2	2.798
10	6 0 47.65	2.1895	22 35 16.9	2.689
11	6 2 59.12	2.1926	22 37 55.0	2.579
12	6 5 10.77	2.1957	22 40 26.5	2.468
13	6 7 22.60	2.1986	22 42 51.3	2.357
14	6 9 34.60	2.2015	22 45 9.4	2.245
15	6 11 46.77	2.2044	22 47 20.8	2.133
16	6 13 59.11	2.2072	22 49 25.5	2.021
17	6 16 11.62	2.2099	22 51 23.4	1.908
18	6 18 24.29	2.2125	22 53 14.4	1.795
19	6 20 37.12	2.2152	22 54 58.8	1.681
20	6 22 50.11	2.2178	22 56 36.2	1.567
21	6 25 3.25	2.2204	22 58 6.8	1.452
22	6 27 16.55	2.2230	22 59 30.6	1.337
23	6 29 30.00	2.2254	N.23 0 47.5	1.221

THURSDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 31 43.60	2.2278	N.23 1 57.4	1.105
1	6 33 57.34	2.2302	23 3 0.3	0.989
2	6 36 11.22	2.2325	23 3 56.1	0.872
3	6 38 25.24	2.2348	23 4 44.9	0.755
4	6 40 39.39	2.2370	23 5 26.6	0.637
5	6 42 53.67	2.2392	23 6 1.3	0.519
6	6 45 8.08	2.2413	23 6 29.0	0.400
7	6 47 22.62	2.2433	23 6 49.6	0.281
8	6 49 37.28	2.2453	23 7 3.0	0.162
9	6 51 52.06	2.2473	23 7 9.2	+0.043
10	6 54 6.96	2.2493	23 7 8.2	−0.077
11	6 56 21.97	2.2511	23 7 0.0	0.197
12	6 58 37.08	2.2528	23 6 44.6	0.317
13	7 0 52.30	2.2545	23 6 22.0	0.437
14	7 3 7.62	2.2562	23 5 52.2	0.558
15	7 5 23.03	2.2578	23 5 15.1	0.679
16	7 7 38.54	2.2593	23 4 30.8	0.800
17	7 9 54.14	2.2608	23 3 39.2	0.921
18	7 12 9.83	2.2622	23 2 40.2	1.043
19	7 14 25.60	2.2635	23 1 33.9	1.165
20	7 16 41.45	2.2648	23 0 20.3	1.287
21	7 18 57.37	2.2659	22 58 59.4	1.409
22	7 21 13.36	2.2670	22 57 31.2	1.532
23	7 23 29.41	2.2681	22 55 55.6	1.654
24	7 25 45.53	2.2692	N.22 54 12.6	1.777

FRIDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 25 45.53	2.2692	N.22 54 12.6	1.777
1	7 28 1.71	2.2702	22 52 22.3	1.899
2	7 30 17.95	2.2711	22 50 24.6	2.022
3	7 32 34.24	2.2719	22 48 19.6	2.145
4	7 34 50.58	2.2727	22 46 7.2	2.268
5	7 37 6.96	2.2734	22 43 47.4	2.391
6	7 39 23.38	2.2740	22 41 20.3	2.514
7	7 41 39.84	2.2746	22 38 45.8	2.637
8	7 43 56.34	2.2752	22 36 3.9	2.760
9	7 46 12.87	2.2757	22 33 14.6	2.883
10	7 48 29.43	2.2762	22 30 17.9	3.006
11	7 50 46.01	2.2765	22 27 13.8	3.129
12	7 53 2.61	2.2768	22 24 2.4	3.252
13	7 55 19.22	2.2770	22 20 43.7	3.375
14	7 57 35.84	2.2772	22 17 17.6	3.497
15	7 59 52.47	2.2773	22 13 44.2	3.620
16	8 2 9.11	2.2773	22 10 3.4	3.742
17	8 4 25.75	2.2773	22 6 15.3	3.864
18	8 6 42.38	2.2772	22 2 19.9	3.985
19	8 8 59.00	2.2770	21 58 17.1	4.107
20	8 11 15.61	2.2768	21 54 6.9	4.228
21	8 13 32.21	2.2765	21 49 49.4	4.350
22	8 15 48.79	2.2762	21 45 24.7	4.471
23	8 18 5.35	2.2759	N.21 40 52.8	4.592

SATURDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 20 21.89	2.2755	N.21 36 13.6	4.712
1	8 22 38.40	2.2751	21 31 27.2	4.833
2	8 24 54.89	2.2746	21 26 33.6	4.953
3	8 27 11.35	2.2740	21 21 32.8	5.073
4	8 29 27.77	2.2733	21 16 24.9	5.192
5	8 31 44.14	2.2725	21 11 9.8	5.311
6	8 34 0.45	2.2716	21 5 47.6	5.430
7	8 36 16.71	2.2707	21 0 18.3	5.548
8	8 38 32.92	2.2698	20 54 41.9	5.666
9	8 40 49.08	2.2690	20 48 58.4	5.783
10	8 43 5.19	2.2681	20 43 7.9	5.900
11	8 45 21.25	2.2672	20 37 10.4	6.016
12	8 47 37.25	2.2662	20 31 5.9	6.132
13	8 49 53.18	2.2651	20 24 54.4	6.248
14	8 52 9.05	2.2640	20 18 36.0	6.363
15	8 54 24.85	2.2628	20 12 10.7	6.478
16	8 56 40.58	2.2615	20 5 38.5	6.592
17	8 58 56.23	2.2602	19 58 59.5	6.705
18	9 1 11.80	2.2588	19 52 13.7	6.818
19	9 3 27.28	2.2574	19 45 21.1	6.931
20	9 5 42.68	2.2560	19 38 21.8	7.043
21	9 7 58.00	2.2546	19 31 15.8	7.154
22	9 10 13.24	2.2532	19 24 3.2	7.265
23	9 12 28.39	2.2517	19 16 44.0	7.375
24	9 14 43.45	2.2502	N.19 9 18.1	7.485

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 14 43.45	2.2502	N.19 9 18.1	7.485
1	9 16 58.41	2.2486	19 1 45.7	7.594
2	9 19 13.28	2.2470	18 54 6.8	7.703
3	9 21 28.05	2.2454	18 46 21.4	7.811
4	9 23 42.73	2.2438	18 38 29.5	7.919
5	9 25 57.31	2.2422	18 30 31.1	8.026
6	9 28 11.79	2.2405	18 22 26.4	8.132
7	9 30 26.17	2.2388	18 14 15.4	8.236
8	9 32 40.45	2.2371	18 5 58.2	8.340
9	9 34 54.62	2.2353	17 57 34.8	8.442
10	9 37 8.68	2.2335	17 49 5.3	8.544
11	9 39 22.63	2.2317	17 40 29.7	8.645
12	9 41 36.47	2.2298	17 31 48.0	8.745
13	9 43 50.20	2.2280	17 23 0.2	8.845
14	9 46 3.82	2.2262	17 14 6.4	8.945
15	9 48 17.33	2.2244	17 5 6.6	9.044
16	9 50 30.73	2.2225	16 56 0.9	9.143
17	9 52 44.02	2.2205	16 46 49.4	9.240
18	9 54 57.19	2.2185	16 37 32.1	9.337
19	9 57 10.24	2.2165	16 28 9.0	9.431
20	9 59 23.17	2.2145	16 18 40.3	9.525
21	10 1 35.98	2.2125	16 9 6.0	9.618
22	10 3 48.68	2.2106	15 59 26.1	9.710
23	10 6 1.26	2.2087	N.15 49 40.7	9.802

MONDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 8 13.73	2.2068	N.15 39 49.8	9.893
1	10 10 26.08	2.2049	15 29 53.5	9.983
2	10 12 38.31	2.2030	15 19 51.8	10.073
3	10 14 50.43	2.2011	15 9 44.8	10.161
4	10 17 2.44	2.1992	14 59 32.5	10.248
5	10 19 14.33	2.1972	14 49 15.0	10.334
6	10 21 26.10	2.1952	14 38 52.4	10.420
7	10 23 37.75	2.1932	14 28 24.7	10.504
8	10 25 49.28	2.1912	14 17 52.0	10.587
9	10 28 0.69	2.1892	14 7 14.3	10.669
10	10 30 11.98	2.1872	13 56 31.6	10.750
11	10 32 23.16	2.1852	13 45 44.0	10.830
12	10 34 34.23	2.1833	13 34 51.7	10.910
13	10 36 45.18	2.1815	13 23 54.7	10.988
14	10 38 56.02	2.1797	13 12 53.1	11.065
15	10 41 6.75	2.1779	13 1 46.9	11.141
16	10 43 17.38	2.1762	12 50 36.1	11.217
17	10 45 27.90	2.1743	12 39 20.8	11.291
18	10 47 38.31	2.1725	12 28 1.1	11.364
19	10 49 48.61	2.1706	12 16 37.0	11.436
20	10 51 58.80	2.1688	12 5 8.6	11.508
21	10 54 8.88	2.1671	11 53 35.9	11.578
22	10 56 18.86	2.1655	11 41 59.1	11.647
23	10 58 28.74	2.1638	11 30 18.3	11.715
24	11 0 38.52	2.1622	N.11 18 33.4	11.782

TUESDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 0 38.52	2.1622	N.11 18 33.4	11.782
1	11 2 48.20	2.1605	11 6 44.5	11.847
2	11 4 57.78	2.1588	10 54 51.8	11.912
3	11 7 7.26	2.1572	10 42 55.2	11.975
4	11 9 16.65	2.1557	10 30 54.7	12.038
5	11 11 25.95	2.1542	10 18 50.5	12.098
6	11 13 35.16	2.1527	10 6 42.7	12.158
7	11 15 44.28	2.1512	9 54 31.4	12.217
8	11 17 53.31	2.1498	9 42 16.5	12.276
9	11 20 2.26	2.1484	9 29 58.1	12.333
10	11 22 11.13	2.1471	9 17 36.5	12.389
11	11 24 19.92	2.1457	9 5 11.6	12.444
12	11 26 28.62	2.1444	8 52 43.3	12.498
13	11 28 37.24	2.1431	8 40 11.9	12.550
14	11 30 45.79	2.1418	8 27 37.5	12.601
15	11 32 54.27	2.1406	8 15 0.0	12.651
16	11 35 2.68	2.1395	8 2 19.4	12.700
17	11 37 11.02	2.1385	7 49 35.9	12.747
18	11 39 19.30	2.1375	7 36 49.6	12.793
19	11 41 27.52	2.1365	7 24 0.6	12.838
20	11 43 35.68	2.1355	7 11 8.9	12.883
21	11 45 43.78	2.1346	6 58 14.5	12.926
22	11 47 51.83	2.1337	6 45 17.5	12.969
23	11 49 59.83	2.1328	N. 6 32 18.1	13.010

WEDNESDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 52 7.78	2.1320	N. 6 19 16.3	13.050
1	11 54 15.68	2.1313	6 6 12.2	13.088
2	11 56 23.54	2.1307	5 53 5.8	13.125
3	11 58 31.36	2.1300	5 39 57.2	13.161
4	12 0 39.14	2.1293	5 26 46.4	13.196
5	12 2 46.88	2.1287	5 13 33.5	13.230
6	12 4 54.59	2.1282	5 0 18.6	13.263
7	12 7 2.27	2.1277	4 47 1.8	13.294
8	12 9 9.92	2.1272	4 33 43.2	13.324
9	12 11 17.54	2.1268	4 20 22.9	13.352
10	12 13 25.14	2.1265	4 7 0.9	13.380
11	12 15 32.73	2.1263	3 53 37.3	13.406
12	12 17 40.31	2.1262	3 40 12.1	13.432
13	12 19 47.88	2.1261	3 26 45.4	13.456
14	12 21 55.44	2.1260	3 13 17.3	13.480
15	12 24 3.00	2.1260	2 59 47.8	13.502
16	12 26 10.56	2.1260	2 46 17.0	13.523
17	12 28 18.12	2.1261	2 32 45.0	13.542
18	12 30 25.69	2.1263	2 19 11.9	13.560
19	12 32 33.26	2.1263	2 5 37.8	13.577
20	12 34 40.84	2.1265	1 52 2.7	13.593
21	12 36 48.44	2.1268	1 38 26.7	13.607
22	12 38 56.06	2.1272	1 24 49.9	13.620
23	12 41 3.70	2.1277	1 11 12.3	13.632
24	12 43 11.37	2.1282	N. 0 57 34.0	13.643

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 9.					SATURDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 43 11.37	2.1282	N. 0 57 34.0	13.643	0	14 26 59.71	2.2196	S. 9 45 52.6	12.675
1	12 45 19.07	2.1287	0 43 55.1	13.652	1	14 29 12.99	2.2229	9 58 31.6	12.623
2	12 47 26.80	2.1292	0 30 15.7	13.660	2	14 31 26.46	2.2262	10 11 7.5	12.570
3	12 49 34.57	2.1298	0 16 35.9	13.667	3	14 33 40.13	2.2295	10 23 40.2	12.515
4	12 51 42.38	2.1305	N. 0 2 55.7	13.673	4	14 35 54.00	2.2329	10 36 9.7	12.460
5	12 53 50.23	2.1312	S. 0 10 44.9	13.678	5	14 38 8.08	2.2364	10 48 35.8	12.403
6	12 55 58.13	2.1320	0 24 25.7	13.682	6	14 40 22.37	2.2399	11 0 58.4	12.346
7	12 58 6.08	2.1329	0 38 6.7	13.684	7	14 42 36.87	2.2435	11 13 17.3	12.285
8	13 0 14.09	2.1338	0 51 47.8	13.685	8	14 44 51.59	2.2471	11 25 32.4	12.222
9	13 2 22.15	2.1348	1 5 28.9	13.685	9	14 47 6.53	2.2508	11 37 43.7	12.159
10	13 4 30.27	2.1358	1 19 10.0	13.684	10	14 49 21.69	2.2545	11 49 51.2	12.095
11	13 6 38.46	2.1370	1 32 50.9	13.679	11	14 51 37.08	2.2582	12 1 54.8	12.030
12	13 8 46.72	2.1382	1 46 31.6	13.675	12	14 53 52.70	2.2620	12 13 54.5	11.963
13	13 10 55.05	2.1394	2 0 12.0	13.669	13	14 56 8.54	2.2658	12 25 50.3	11.895
14	13 13 3.45	2.1406	2 13 52.0	13.663	14	14 58 24.61	2.2697	12 37 42.1	11.826
15	13 15 11.93	2.1419	2 27 31.6	13.655	15	15 0 40.91	2.2735	12 49 29.7	11.755
16	13 17 20.49	2.1433	2 41 10.7	13.647	16	15 2 57.44	2.2774	13 1 13.0	11.683
17	13 19 29.14	2.1449	2 54 49.2	13.636	17	15 5 14.20	2.2813	13 12 51.9	11.609
18	13 21 37.89	2.1465	3 8 27.0	13.624	18	15 7 31.20	2.2853	13 24 26.4	11.535
19	13 23 46.73	2.1481	3 22 4.1	13.611	19	15 9 48.44	2.2893	13 35 56.4	11.459
20	13 25 55.67	2.1498	3 35 40.4	13.598	20	15 12 5.92	2.2934	13 47 21.8	11.382
21	13 28 4.71	2.1515	3 49 15.8	13.582	21	15 14 23.65	2.2974	13 58 42.4	11.303
22	13 30 13.85	2.1532	4 2 50.2	13.565	22	15 16 41.62	2.3015	14 9 58.2	11.223
23	13 32 23.10	2.1550	S. 4 16 23.6	13.547	23	15 18 59.84	2.3056	S. 14 21 9.1	11.142
	FRIDAY 10.					SUNDAY 12.			
0	13 34 32.46	2.1568	S. 4 29 55.9	13.528	0	15 21 18.32	2.3098	S. 14 32 15.1	11.060
1	13 36 41.93	2.1588	4 43 27.0	13.507	1	15 23 37.04	2.3140	14 43 16.1	10.976
2	13 38 51.52	2.1608	4 56 56.8	13.485	2	15 25 56.01	2.3182	14 54 12.1	10.890
3	13 41 1.23	2.1629	5 10 25.2	13.461	3	15 28 15.23	2.3224	15 5 2.9	10.803
4	13 43 11.07	2.1650	5 23 52.1	13.437	4	15 30 34.70	2.3267	15 15 48.5	10.716
5	13 45 21.04	2.1673	5 37 17.5	13.411	5	15 32 54.43	2.3309	15 26 28.9	10.626
6	13 47 31.15	2.1696	5 50 41.3	13.384	6	15 35 14.41	2.3352	15 37 4.0	10.536
7	13 49 41.40	2.1719	6 4 3.6	13.356	7	15 37 34.65	2.3395	15 47 33.6	10.444
8	13 51 51.78	2.1742	6 17 24.2	13.327	8	15 39 55.15	2.3438	15 57 57.6	10.351
9	13 54 2.30	2.1767	6 30 43.0	13.296	9	15 42 15.91	2.3481	16 8 15.9	10.256
10	13 56 12.97	2.1792	6 43 59.9	13.264	10	15 44 36.93	2.3524	16 18 28.4	10.160
11	13 58 23.80	2.1817	6 57 14.8	13.230	11	15 46 58.21	2.3567	16 28 35.0	10.063
12	14 0 34.78	2.1843	7 10 27.6	13.195	12	15 49 19.75	2.3611	16 38 35.8	9.965
13	14 2 45.92	2.1869	7 23 38.2	13.159	13	15 51 41.55	2.3655	16 48 30.7	9.865
14	14 4 57.21	2.1896	7 36 46.6	13.122	14	15 54 3.61	2.3698	16 58 19.6	9.764
15	14 7 8.66	2.1923	7 49 52.8	13.083	15	15 56 25.93	2.3741	17 8 2.4	9.661
16	14 9 20.28	2.1950	8 2 56.7	13.043	16	15 58 48.51	2.3784	17 17 39.1	9.558
17	14 11 32.07	2.1980	8 15 58.2	13.001	17	16 1 11.35	2.3827	17 27 9.6	9.453
18	14 13 44.04	2.2010	8 28 57.1	12.958	18	16 3 34.45	2.3870	17 36 33.7	9.347
19	14 15 56.19	2.2040	8 41 53.3	12.913	19	16 5 57.80	2.3913	17 45 51.3	9.239
20	14 18 8.52	2.2070	8 54 46.8	12.868	20	16 8 21.41	2.3956	17 55 2.3	9.130
21	14 20 21.04	2.2101	9 7 37.6	12.821	21	16 10 45.27	2.3999	18 4 6.8	9.019
22	14 22 33.74	2.2132	9 20 25.5	12.774	22	16 13 9.39	2.4042	18 13 4.7	8.909
23	14 24 46.63	2.2164	9 33 10.5	12.725	23	16 15 33.77	2.4085	18 21 55.9	8.797
24	14 26 59.71	2.2196	S. 9 45 52.6	12.675	24	16 17 58.40	2.4128	S. 18 30 40.3	8.683

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 13.					**WEDNESDAY 15.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	16 17 58.40	2.4128	S. 18 30 40.3	8.683	0	18 17 49.16	2.5538	S. 22 56 32.3	2.071
1	16 20 23.29	2.4170	18 39 17.8	8.568	1	18 20 22.42	2.5546	22 58 32.0	1.917
2	16 22 48.44	2.4212	18 47 48.4	8.452	2	18 22 55.73	2.5554	23 0 22.4	1.763
3	16 25 13.84	2.4254	18 56 12.0	8.334	3	18 25 29.08	2.5560	23 2 3.5	1.609
4	16 27 39.49	2.4295	19 4 28.6	8.216	4	18 28 2.46	2.5566	23 3 35.3	1.454
5	16 30 5.39	2.4336	19 12 38.1	8.096	5	18 30 35.88	2.5570	23 4 57.8	1.300
6	16 32 31.53	2.4377	19 20 40.5	7.976	6	18 33 9.32	2.5573	23 6 11.0	1.145
7	16 34 57.91	2.4418	19 28 35.6	7.854	7	18 35 42.77	2.5574	23 7 15.0	0.990
8	16 37 24.53	2.4458	19 36 23.3	7.731	8	18 38 16.22	2.5575	23 8 9.7	0.835
9	16 39 51.39	2.4498	19 44 3.5	7.607	9	18 40 49.67	2.5574	23 8 55.1	0.680
10	16 42 18.49	2.4537	19 51 36.2	7.482	10	18 43 23.11	2.5572	23 9 31.3	0.525
11	16 44 45.83	2.4576	19 59 1.3	7.355	11	18 45 56.53	2.5569	23 9 58.2	0.370
12	16 47 13.41	2.4615	20 6 18.8	7.228	12	18 48 29.93	2.5565	23 10 15.8	0.215
13	16 49 41.22	2.4652	20 13 28.7	7.099	13	18 51 3.31	2.5560	23 10 24.1	−0.060
14	16 52 9.25	2.4690	20 20 30.8	6.970	14	18 53 36.66	2.5554	23 10 23.0	+0.096
15	16 54 37.51	2.4727	20 27 25.1	6.839	15	18 56 9.97	2.5547	23 10 12.6	0.251
16	16 57 5.98	2.4763	20 34 11.6	6.708	16	18 58 43.23	2.5538	23 9 52.9	0.405
17	16 59 34.67	2.4799	20 40 50.2	6.575	17	19 1 16.44	2.5529	23 9 23.9	0.560
18	17 2 3.57	2.4835	20 47 20.8	6.442	18	19 3 49.59	2.5518	23 8 45.6	0.714
19	17 4 32.69	2.4870	20 53 43.4	6.307	19	19 6 22.67	2.5506	23 7 58.0	0.868
20	17 7 2.02	2.4905	20 59 57.9	6.172	20	19 8 55.67	2.5493	23 7 1.2	1.022
21	17 9 31.55	2.4939	21 6 4.2	6.035	21	19 11 28.59	2.5479	23 5 55.3	1.175
22	17 12 1.28	2.4972	21 12 2.2	5.897	22	19 14 1.42	2.5463	23 4 40.2	1.328
23	17 14 31.21	2.5004	S. 21 17 51.8	5.758	23	19 16 34.15	2.5446	S. 23 3 15.9	1.481
	TUESDAY 14.					**THURSDAY 16.**			
0	17 17 1.34	2.5036	S. 21 23 33.1	5.618	0	19 19 6.77	2.5428	S. 23 1 42.5	1.633
1	17 19 31.66	2.5067	21 29 6.0	5.478	1	19 21 39.29	2.5409	22 59 59.9	1.785
2	17 22 2.16	2.5097	21 34 30.5	5.337	2	19 24 11.69	2.5390	22 58 8.2	1.937
3	17 24 32.84	2.5126	21 39 46.6	5.195	3	19 26 43.97	2.5369	22 56 7.5	2.088
4	17 27 3.69	2.5155	21 44 54.2	5.053	4	19 29 16.11	2.5347	22 53 57.7	2.238
5	17 29 34.71	2.5183	21 49 53.3	4.910	5	19 31 48.13	2.5323	22 51 38.9	2.388
6	17 32 5.89	2.5210	21 54 43.8	4.767	6	19 34 20.00	2.5299	22 49 11.1	2.537
7	17 34 37.23	2.5236	21 59 25.6	4.622	7	19 36 51.73	2.5274	22 46 34.4	2.686
8	17 37 8.72	2.5262	22 3 58.7	4.477	8	19 39 23.30	2.5248	22 43 48.7	2.835
9	17 39 40.36	2.5286	22 8 23.1	4.331	9	19 41 54.71	2.5220	22 40 54.1	2.983
10	17 42 12.14	2.5309	22 12 38.6	4.184	10	19 44 25.95	2.5192	22 37 50.7	3.130
11	17 44 44.06	2.5331	22 16 45.2	4.036	11	19 46 57.02	2.5162	22 34 38.5	3.276
12	17 47 16.11	2.5353	22 20 42.9	3.888	12	19 49 27.90	2.5132	22 31 17.6	3.422
13	17 49 48.29	2.5374	22 24 31.7	3.739	13	19 51 58.61	2.5100	22 27 48.0	3.567
14	17 52 20.60	2.5395	22 28 11.6	3.590	14	19 54 29.12	2.5068	22 24 9.6	3.712
15	17 54 53.03	2.5414	22 31 42.5	3.440	15	19 56 59.44	2.5034	22 20 22.5	3.855
16	17 57 25.57	2.5432	22 35 4.3	3.290	16	19 59 29.56	2.5000	22 16 26.9	3.998
17	17 59 58.22	2.5449	22 38 17.1	3.139	17	20 1 59.47	2.4965	22 12 22.8	4.139
18	18 2 30.97	2.5465	22 41 20.9	2.988	18	20 4 29.16	2.4930	22 8 10.2	4.280
19	18 5 3.81	2.5479	22 44 15.6	2.837	19	20 6 58.63	2.4893	22 3 49.2	4.419
20	18 7 36.73	2.5493	22 47 1.2	2.685	20	20 9 27.87	2.4855	21 59 19.9	4.558
21	18 10 9.73	2.5506	22 49 37.7	2.532	21	20 11 56.88	2.4816	21 54 42.4	4.696
22	18 12 42.81	2.5518	22 52 5.1	2.378	22	20 14 25.66	2.4777	21 49 56.6	4.833
23	18 15 15.95	2.5529	22 54 23.3	2.225	23	20 16 54.20	2.4737	21 45 2.6	4.969
24	18 17 49.16	2.5538	S. 22 56 32.3	2.071	24	20 19 22.50	2.4696	S. 21 40 0.4	5.104

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 17.

Hour	Right Ascension	Diff. for 1 m.	Declination	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 19 [illegible]	[illegible]	S. 21 40 [illegible]	[illegible]
1	20 21 [illegible]	[illegible]	21 34 [illegible]	[illegible]
2	20 24 [illegible]	[illegible]	21 29 [illegible]	[illegible]
3	20 26 [illegible]	[illegible]	21 24 [illegible]	[illegible]
4	20 29 [illegible]	[illegible]	21 18 [illegible]	[illegible]
5	20 31 [illegible]	[illegible]	21 12 [illegible]	[illegible]
6	20 34 [illegible]	[illegible]	21 6 [illegible]	[illegible]
7	20 36 [illegible]	[illegible]	21 1 [illegible]	[illegible]
8	20 38 [illegible]	[illegible]	20 54 [illegible]	[illegible]
9	20 41 [illegible]	[illegible]	20 48 [illegible]	[illegible]
10	20 43 [illegible]	[illegible]	20 42 [illegible]	[illegible]
11	20 46 [illegible]	[illegible]	20 35 [illegible]	[illegible]
12	20 48 [illegible]	[illegible]	20 29 [illegible]	[illegible]
13	20 51 [illegible]	[illegible]	20 22 [illegible]	[illegible]
14	20 53 [illegible]	[illegible]	20 15 [illegible]	[illegible]
15	20 55 [illegible]	[illegible]	20 8 [illegible]	[illegible]
16	20 58 [illegible]	[illegible]	20 1 [illegible]	[illegible]
17	21 0 [illegible]	[illegible]	19 54 [illegible]	[illegible]
18	21 3 [illegible]	[illegible]	19 47 [illegible]	[illegible]
19	21 5 [illegible]	[illegible]	19 40 [illegible]	[illegible]
20	21 7 [illegible]	[illegible]	19 32 [illegible]	[illegible]
21	21 10 [illegible]	[illegible]	19 24 [illegible]	[illegible]
22	21 12 [illegible]	[illegible]	19 17 [illegible]	[illegible]
23	21 14 [illegible]	[illegible]	S. 19 9 [illegible]	[illegible]

SATURDAY 18.

Hour	Right Ascension	Diff. for 1 m.	Declination	Diff. for 1 m.
0	21 17 [illegible]	[illegible]	S. 19 1 [illegible]	[illegible]
1	21 19 [illegible]	[illegible]	18 [illegible]	[illegible]
2	21 21 [illegible]	[illegible]	18 [illegible]	[illegible]
3	21 24 [illegible]	[illegible]	18 [illegible]	[illegible]
4	21 26 [illegible]	[illegible]	18 [illegible]	[illegible]
5	21 28 [illegible]	[illegible]	18 [illegible]	[illegible]
6	21 31 [illegible]	[illegible]	18 11 [illegible]	[illegible]
7	21 33 [illegible]	[illegible]	18 [illegible]	[illegible]
8	21 35 [illegible]	[illegible]	17 51 [illegible]	[illegible]
9	21 38 [illegible]	[illegible]	17 44 [illegible]	[illegible]
10	21 40 [illegible]	[illegible]	17 35 [illegible]	[illegible]
11	21 42 [illegible]	[illegible]	17 [illegible]	[illegible]
12	21 45 [illegible]	[illegible]	17 17 [illegible]	[illegible]
13	21 47 [illegible]	[illegible]	17 [illegible]	[illegible]
14	21 49 [illegible]	[illegible]	16 [illegible]	[illegible]
15	21 51 [illegible]	[illegible]	16 [illegible]	[illegible]
16	21 54 [illegible]	[illegible]	16 [illegible]	[illegible]
17	21 56 [illegible]	[illegible]	16 [illegible]	[illegible]
18	21 58 [illegible]	[illegible]	16 [illegible]	[illegible]
19	22 1 [illegible]	[illegible]	16 11 [illegible]	[illegible]
20	22 3 [illegible]	[illegible]	16 1 [illegible]	[illegible]
21	22 5 [illegible]	[illegible]	15 51 [illegible]	[illegible]
22	22 7 [illegible]	[illegible]	15 41 [illegible]	[illegible]
23	22 9 [illegible]	[illegible]	15 31 [illegible]	[illegible]
24	22 12 [illegible]	[illegible]	S. 15 21 [illegible]	[illegible]

SUNDAY 19.

Hour	Right Ascension	Diff. for 1 m.	Declination	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 12 [illegible]	[illegible]	S. 15 21 [illegible]	[illegible]
1	22 14 [illegible]	[illegible]	15 11 [illegible]	[illegible]
2	22 16 [illegible]	[illegible]	15 0 [illegible]	[illegible]
3	22 18 [illegible]	[illegible]	14 50 [illegible]	[illegible]
4	22 21 [illegible]	[illegible]	14 39 [illegible]	[illegible]
5	22 23 [illegible]	[illegible]	14 28 [illegible]	[illegible]
6	22 25 [illegible]	[illegible]	14 18 [illegible]	[illegible]
7	22 27 [illegible]	[illegible]	14 8 [illegible]	[illegible]
8	22 29 [illegible]	[illegible]	13 57 [illegible]	[illegible]
9	22 31 [illegible]	[illegible]	13 46 [illegible]	[illegible]
10	22 34 [illegible]	[illegible]	13 35 [illegible]	[illegible]
11	22 36 [illegible]	[illegible]	13 25 [illegible]	[illegible]
12	22 38 [illegible]	[illegible]	13 14 [illegible]	[illegible]
13	22 40 [illegible]	[illegible]	13 3 [illegible]	[illegible]
14	22 42 [illegible]	[illegible]	12 51 [illegible]	[illegible]
15	22 44 [illegible]	[illegible]	12 40 [illegible]	[illegible]
16	22 47 [illegible]	[illegible]	12 29 [illegible]	[illegible]
17	22 49 [illegible]	[illegible]	12 18 [illegible]	[illegible]
18	22 51 [illegible]	[illegible]	12 7 [illegible]	[illegible]
19	22 53 [illegible]	[illegible]	11 55 [illegible]	[illegible]
20	22 55 [illegible]	[illegible]	11 44 [illegible]	[illegible]
21	22 57 [illegible]	[illegible]	11 33 [illegible]	[illegible]
22	22 59 [illegible]	[illegible]	11 21 [illegible]	[illegible]
23	23 1 [illegible]	[illegible]	S. 11 10 [illegible]	[illegible]

MONDAY 20.

Hour	Right Ascension	Diff. for 1 m.	Declination	Diff. for 1 m.
0	23 3 [illegible]	[illegible]	S. 10 58 [illegible]	[illegible]
1	23 6 [illegible]	[illegible]	10 [illegible]	[illegible]
2	23 8 [illegible]	[illegible]	10 [illegible]	[illegible]
3	23 10 [illegible]	[illegible]	10 23 [illegible]	[illegible]
4	23 12 [illegible]	[illegible]	10 11 [illegible]	[illegible]
5	23 14 [illegible]	[illegible]	10 0 [illegible]	[illegible]
6	23 16 [illegible]	[illegible]	9 [illegible]	[illegible]
7	23 18 [illegible]	[illegible]	9 [illegible]	[illegible]
8	23 20 [illegible]	[illegible]	9 24 [illegible]	[illegible]
9	23 22 [illegible]	[illegible]	9 12 [illegible]	[illegible]
10	23 24 [illegible]	[illegible]	9 0 [illegible]	[illegible]
11	23 26 [illegible]	[illegible]	8 [illegible]	[illegible]
12	23 28 [illegible]	[illegible]	8 [illegible]	[illegible]
13	23 [illegible]	[illegible]	8 24 [illegible]	[illegible]
14	23 [illegible]	[illegible]	8 12 [illegible]	[illegible]
15	23 [illegible]	[illegible]	8 [illegible]	[illegible]
16	23 [illegible]	[illegible]	7 [illegible]	[illegible]
17	23 [illegible]	[illegible]	7 [illegible]	[illegible]
18	23 [illegible]	[illegible]	7 [illegible]	[illegible]
19	23 [illegible]	[illegible]	7 [illegible]	[illegible]
20	23 [illegible]	[illegible]	6 [illegible]	[illegible]
21	23 [illegible]	[illegible]	6 [illegible]	[illegible]
22	23 [illegible]	[illegible]	6 [illegible]	[illegible]
23	23 [illegible]	[illegible]	6 [illegible]	[illegible]
24	23 [illegible]	[illegible]	S. [illegible]	[illegible]

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 52 58.48	1.9955	S. 6 10 50.1	12.281
1	23 54 58.10	1.9920	5 58 32.8	12.296
2	23 56 57.51	1.9885	5 46 14.5	12.310
3	23 58 56.71	1.9851	5 33 55.4	12.323
4	0 0 55.71	1.9817	5 21 35.6	12.335
5	0 2 54.51	1.9784	5 9 15.1	12.347
6	0 4 53.11	1.9752	4 56 53.9	12.357
7	0 6 51.51	1.9720	4 44 32.2	12.367
8	0 8 49.72	1.9688	4 32 9.9	12.375
9	0 10 47.75	1.9657	4 19 47.2	12.382
10	0 12 45.61	1.9627	4 7 24.0	12.388
11	0 14 43.29	1.9597	3 55 0.5	12.394
12	0 16 40.79	1.9568	3 42 36.7	12.398
13	0 18 38.12	1.9540	3 30 12.7	12.402
14	0 20 35.28	1.9512	3 17 48.4	12.405
15	0 22 32.27	1.9485	3 5 24.0	12.407
16	0 24 29.10	1.9458	2 52 59.5	12.408
17	0 26 25.77	1.9432	2 40 35.0	12.408
18	0 28 22.28	1.9407	2 28 10.5	12.408
19	0 30 18.63	1.9382	2 15 46.1	12.406
20	0 32 14.83	1.9358	2 3 21.8	12.404
21	0 34 10.89	1.9334	1 50 57.7	12.401
22	0 36 6.82	1.9310	1 38 33.8	12.396
23	0 38 2.62	1.9287	S. 1 26 10.1	12.391

WEDNESDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 39 58.28	1.9265	S. 1 13 46.7	12.385
1	0 41 53.80	1.9244	1 1 23.8	12.378
2	0 43 49.19	1.9223	0 49 1.4	12.370
3	0 45 44.46	1.9203	0 36 39.4	12.362
4	0 47 39.61	1.9183	0 24 18.0	12.352
5	0 49 34.65	1.9164	S. 0 11 57.2	12.342
6	0 51 29.58	1.9145	N. 0 0 23.0	12.330
7	0 53 24.40	1.9127	0 12 42.5	12.318
8	0 55 19.11	1.9110	0 25 1.2	12.305
9	0 57 13.72	1.9094	0 37 19.1	12.292
10	0 59 8.23	1.9078	0 49 36.2	12.278
11	1 1 2.65	1.9062	1 1 52.5	12.264
12	1 2 56.98	1.9047	1 14 7.9	12.248
13	1 4 51.22	1.9032	1 26 22.3	12.231
14	1 6 45.37	1.9018	1 38 35.7	12.213
15	1 8 39.43	1.9005	1 50 47.9	12.195
16	1 10 33.41	1.8992	2 2 59.1	12.176
17	1 12 27.32	1.8980	2 15 9.1	12.157
18	1 14 21.16	1.8969	2 27 18.0	12.137
19	1 16 14.94	1.8958	2 39 25.6	12.116
20	1 18 8.66	1.8948	2 51 31.9	12.094
21	1 20 2.32	1.8938	3 3 36.9	12.071
22	1 21 55.93	1.8929	3 15 40.6	12.048
23	1 23 49.48	1.8921	3 27 42.9	12.024
24	1 25 42.98	1.8913	N. 3 39 43.8	12.000

THURSDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 25 42.98	1.8913	N. 3 39 43.8	12.000
1	1 27 36.42	1.8905	3 51 43.1	11.975
2	1 29 29.81	1.8898	4 3 40.8	11.949
3	1 31 23.17	1.8892	4 15 37.0	11.922
4	1 33 16.50	1.8886	4 27 31.6	11.895
5	1 35 9.80	1.8881	4 39 24.5	11.867
6	1 37 3.07	1.8876	4 51 15.7	11.838
7	1 38 56.32	1.8872	5 3 5.2	11.808
8	1 40 49.54	1.8868	5 14 52.9	11.778
9	1 42 42.74	1.8865	5 26 38.8	11.747
10	1 44 35.92	1.8863	5 38 22.8	11.716
11	1 46 29.09	1.8861	5 50 4.9	11.684
12	1 48 22.25	1.8860	6 1 45.0	11.652
13	1 50 15.40	1.8859	6 13 23.1	11.619
14	1 52 8.55	1.8859	6 24 59.2	11.585
15	1 54 1.70	1.8859	6 36 33.2	11.550
16	1 55 54.86	1.8860	6 48 5.2	11.515
17	1 57 48.02	1.8861	6 59 35.1	11.479
18	1 59 41.19	1.8863	7 11 2.8	11.443
19	2 1 34.37	1.8865	7 22 28.3	11.406
20	2 3 27.57	1.8868	7 33 51.5	11.368
21	2 5 20.79	1.8872	7 45 12.5	11.329
22	2 7 14.03	1.8876	7 56 31.1	11.290
23	2 9 7.30	1.8881	N. 8 7 47.3	11.251

FRIDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 11 0.60	1.8887	N. 8 19 1.2	11.210
1	2 12 53.93	1.8893	8 30 12.7	11.169
2	2 14 47.29	1.8899	8 41 21.6	11.127
3	2 16 40.69	1.8906	8 52 28.0	11.085
4	2 18 34.14	1.8913	9 3 31.8	11.042
5	2 20 27.63	1.8920	9 14 33.0	10.999
6	2 22 21.17	1.8928	9 25 31.6	10.955
7	2 24 14.76	1.8936	9 36 27.5	10.910
8	2 26 8.41	1.8945	9 47 20.7	10.865
9	2 28 2.11	1.8955	9 58 11.2	10.819
10	2 29 55.87	1.8965	10 8 59.0	10.773
11	2 31 49.69	1.8976	10 19 44.0	10.726
12	2 33 43.57	1.8987	10 30 26.2	10.679
13	2 35 37.51	1.8999	10 41 5.5	10.631
14	2 37 31.52	1.9011	10 51 41.9	10.582
15	2 39 25.61	1.9024	11 2 15.3	10.532
16	2 41 19.78	1.9037	11 12 45.7	10.481
17	2 43 14.04	1.9050	11 23 13.0	10.430
18	2 45 8.39	1.9064	11 33 37.2	10.378
19	2 47 2.82	1.9078	11 43 58.3	10.326
20	2 48 57.34	1.9093	11 54 16.3	10.274
21	2 50 51.95	1.9109	12 4 31.2	10.221
22	2 52 46.65	1.9125	12 14 42.9	10.167
23	2 54 41.45	1.9141	12 24 51.4	10.113
24	2 56 36.35	1.9158	N. 12 34 56.7	10.058

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 25.					MONDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 56 36.35	1.9158	N.12 34 56.7	10.058	0	4 31 12.58	2.0380	N.19 23 16.9	6.724
1	2 58 31.35	1.9175	12 44 58.6	10.002	1	4 33 14.95	2.0411	19 29 57.8	6.640
2	3 0 26.45	1.9193	12 54 57.1	9.946	2	4 35 17.51	2.0443	19 36 33.7	6.555
3	3 2 21.65	1.9211	13 4 52.3	9.889	3	4 37 20.26	2.0475	19 43 4.5	6.470
4	3 4 16.96	1.9229	13 14 44.1	9.832	4	4 39 23.20	2.0507	19 49 30.1	6.384
5	3 6 12.39	1.9248	13 24 32.4	9.775	5	4 41 26.33	2.0539	19 55 50.5	6.297
6	3 8 7.93	1.9267	13 34 17.1	9.717	6	4 43 29.65	2.0571	20 2 5.8	6.210
7	3 10 3.59	1.9287	13 43 58.5	9.658	7	4 45 33.17	2.0603	20 8 15.7	6.122
8	3 11 59.37	1.9307	13 53 36.2	9.598	8	4 47 36.88	2.0635	20 14 20.4	6.033
9	3 13 55.27	1.9327	14 3 10.3	9.538	9	4 49 40.79	2.0667	20 20 19.8	5.944
10	3 15 51.29	1.9348	14 12 40.8	9.477	10	4 51 44.89	2.0700	20 26 13.8	5.854
11	3 17 47.44	1.9369	14 22 7.6	9.415	11	4 53 49.19	2.0732	20 32 2.3	5.763
12	3 19 43.72	1.9391	14 31 30.7	9.353	12	4 55 53.68	2.0765	20 37 45.3	5.672
13	3 21 40.13	1.9413	14 40 50.0	9.291	13	4 57 58.36	2.0797	20 43 22.9	5.581
14	3 23 36.67	1.9435	14 50 5.6	9.228	14	5 0 3.24	2.0830	20 48 55.0	5.489
15	3 25 33.34	1.9458	14 59 17.4	9.165	15	5 2 8.31	2.0862	20 54 21.6	5.397
16	3 27 30.15	1.9481	15 8 25.4	9.101	16	5 4 13.58	2.0895	20 59 42.6	5.303
17	3 29 37.10	1.9505	15 17 29.5	9.036	17	5 6 19.04	2.0927	21 4 57.9	5.209
18	3 31 34.19	1.9529	15 26 29.8	8.971	18	5 8 24.70	2.0960	21 10 7.7	5.114
19	3 33 31.43	1.9553	15 35 26.0	8.905	19	5 10 30.55	2.0992	21 15 11.6	5.018
20	3 35 28.83	1.9578	15 44 18.3	8.838	20	5 12 36.60	2.1025	21 20 9.9	4.922
21	3 37 26.38	1.9603	15 53 6.5	8.770	21	5 14 42.85	2.1057	21 25 2.5	4.826
22	3 39 24.08	1.9628	16 1 50.7	8.702	22	5 16 49.29	2.1089	21 29 49.3	4.729
23	3 41 21.93	1.9653	N.16 10 30.8	8.633	23	5 18 55.92	2.1121	N.21 34 30.2	4.632
	SUNDAY 26.					TUESDAY 28.			
0	3 43 9.94	1.9679	N.16 19 6.7	8.564	0	5 21 2.74	2.1153	N.21 39 5.2	4.534
1	3 45 8.11	1.9705	16 27 38.5	8.494	1	5 23 9.76	2.1185	21 43 34.3	4.435
2	3 47 6.43	1.9732	16 36 6.1	8.424	2	5 25 16.97	2.1217	21 47 57.5	4.336
3	3 49 4.90	1.9759	16 44 29.4	8.353	3	5 27 24.37	2.1249	21 52 14.7	4.236
4	3 51 3.53	1.9787	16 52 48.5	8.282	4	5 29 31.96	2.1280	21 56 25.9	4.136
5	3 53 2.33	1.9814	17 1 3.3	8.210	5	5 31 39.74	2.1312	22 0 31.1	4.035
6	3 55 1.29	1.9842	17 9 13.8	8.137	6	5 33 47.71	2.1343	22 4 30.3	3.934
7	3 57 0.41	1.9870	17 17 19.9	8.064	7	5 35 55.86	2.1374	22 8 23.2	3.832
8	3 58 59.70	1.9898	17 25 21.6	7.990	8	5 38 4.20	2.1405	22 12 10.1	3.729
9	4 0 59.17	1.9926	17 33 18.8	7.915	9	5 40 12.72	2.1436	22 15 50.8	3.625
10	4 2 58.81	1.9955	17 41 11.4	7.839	10	5 42 21.43	2.1467	22 19 25.3	3.521
11	4 4 58.63	1.9984	17 48 59.5	7.763	11	5 44 30.32	2.1498	22 22 53.5	3.417
12	4 6 58.62	2.0013	17 56 43.0	7.687	12	5 46 39.40	2.1528	22 26 15.4	3.312
13	4 8 58.79	2.0042	18 4 21.9	7.610	13	5 48 48.66	2.1558	22 29 31.0	3.207
14	4 10 59.13	2.0072	18 11 56.2	7.533	14	5 50 58.10	2.1588	22 32 40.3	3.101
15	4 12 59.65	2.0102	18 19 25.9	7.455	15	5 53 7.72	2.1618	22 35 43.2	2.995
16	4 15 0.35	2.0132	18 26 50.9	7.376	16	5 55 17.52	2.1647	22 38 39.7	2.888
17	4 17 1.23	2.0162	18 34 11.2	7.297	17	5 57 27.49	2.1676	22 41 29.8	2.780
18	4 19 2.30	2.0193	18 41 26.7	7.217	18	5 59 37.64	2.1705	22 44 13.5	2.672
19	4 21 3.55	2.0224	18 48 37.3	7.137	19	6 1 47.96	2.1734	22 46 50.5	2.563
20	4 23 4.98	2.0255	18 55 43.1	7.056	20	6 3 58.45	2.1762	22 49 21.1	2.454
21	4 25 6.60	2.0286	19 2 44.0	6.974	21	6 6 9.11	2.1790	22 51 45.2	2.345
22	4 27 8.41	2.0317	19 9 39.9	6.891	22	6 8 19.93	2.1818	22 54 2.7	2.235
23	4 29 10.40	2.0348	19 16 30.9	6.808	23	6 10 30.92	2.1845	22 56 13.6	2.125
24	4 31 12.58	2.0380	N.19 23 16.9	6.724	24	6 12 42.07	2.1872	N.22 58 17.8	2.014

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

PHASES OF THE MOON.

	d	h	m
○ Full Moon, ...	5	2	2.0
☾ Last Quarter, ...	12	3	0.4
● New Moon, ...	19	1	49.0
☽ First Quarter, ...	26	22	38.3

	d	h
☾ Perigee, ...	13	7.1
☾ Apogee, ...	26	9.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Diff.	IIIh.			P. L. of Diff.	VIh.			P. L. of Diff.	IXh.			P. L. of Diff.
			°	′	″		°	′	″		°	′	″		°	′	″	
1	Sun	W.	132	53	26	3363	134	16	25	3353	135	39	35	3345	137	2	55	3332
	α Pegasi	W.	93	42	21	3380	95	5	0	3372	96	27	48	3366	97	50	43	3360
	α Arietis	W.	50	20	24	3214	51	46	16	3195	53	12	31	3178	54	39	6	3160
	Aldebaran	W.	17	37	28	3022	19	7	13	3006	20	37	18	2991	22	7	42	2977
	Pollux	E.	27	25	51	3076	25	57	12	3080	24	28	38	3086	23	0	11	3093
	Regulus	E.	62	54	47	2982	61	24	12	2973	59	53	26	2965	58	22	29	2956
	Mars	E.	102	43	0	3007	101	12	56	2997	99	42	40	2988	98	12	12	2977
	Spica	E.	116	48	55	3015	115	19	1	3004	113	48	53	2994	113	18	33	2985
2	α Pegasi	W.	104	47	0	3333	106	10	33	3331	107	34	9	3326	108	57	50	3325
	α Arietis	W.	61	57	14	3077	63	25	52	3062	64	54	48	3047	66	24	3	3032
	Aldebaran	W.	29	43	51	2913	31	15	53	2901	32	48	10	2890	34	20	42	2876
	Jupiter	W.	20	47	51	2899	22	20	11	2887	23	52	46	2876	25	25	35	2863
	Regulus	E.	50	44	49	2908	49	12	40	2898	47	40	18	2888	46	7	44	2877
	Mars	E.	90	36	35	2924	89	4	47	2912	87	32	44	2901	86	0	27	2891
	Spica	E.	104	43	37	2931	103	11	57	2919	101	40	2	2908	100	7	53	2897
3	α Arietis	W.	73	54	51	2959	75	25	55	2947	76	57	14	2932	78	28	52	2920
	Aldebaran	W.	42	7	21	2816	43	41	28	2803	45	15	52	2792	46	50	30	2782
	Jupiter	W.	33	13	38	2805	34	48	0	2792	36	22	39	2782	37	57	31	2769
	Regulus	E.	38	21	34	2826	36	47	40	2818	35	13	35	2807	33	39	16	2798
	Mars	E.	78	15	20	2831	76	41	32	2819	75	7	29	2808	73	33	11	2795
	Spica	E.	92	23	32	2839	90	49	55	2828	89	16	3	2818	87	41	58	2805
4	α Arietis	W.	86	11	7	2856	87	44	22	2845	89	17	52	2834	90	51	36	2821
	Aldebaran	W.	54	47	35	2720	56	23	48	2708	58	0	17	2698	59	37	0	2686
	Jupiter	W.	45	55	50	2710	47	32	16	2698	49	8	58	2688	50	45	54	2676
	Regulus	E.	25	44	47	2757	24	9	23	2752	22	33	52	2747	20	58	14	2746
	Mars	E.	65	37	38	2735	64	1	44	2722	62	25	33	2711	60	49	8	2699
	Spica	E.	79	47	40	2748	78	12	4	2737	76	36	13	2727	75	0	9	2715
5	α Arietis	W.	98	43	53	2770	100	19	0	2761	101	54	19	2753	103	29	49	2745
	Aldebaran	W.	67	44	28	2629	69	22	43	2618	71	1	13	2608	72	39	57	2598
	Jupiter	W.	58	54	23	2621	60	32	49	2610	62	11	30	2600	63	50	25	2590
	Pollux	W.	24	1	21	2744	25	37	3	2720	27	13	16	2698	28	49	58	2678
	Mars	E.	52	43	5	2641	51	5	6	2630	49	26	52	2621	47	48	25	2609
	Spica	E.	66	56	11	2663	65	18	42	2655	63	41	1	2645	62	3	7	2635
	Antares	E.	112	50	8	2665	111	12	41	2652	109	34	57	2642	107	56	59	2631
6	Aldebaran	W.	80	57	7	2548	82	37	14	2538	84	17	34	2530	85	58	5	2520
	Jupiter	W.	72	8	27	2540	73	48	44	2532	75	29	13	2523	77	9	54	2514
	Pollux	W.	36	59	35	2598	38	38	33	2585	40	17	49	2572	41	57	22	2561
	Mars	E.	39	32	29	2558	37	52	36	2548	36	12	30	2540	34	32	13	2530
	Spica	E.	53	50	40	2595	52	11	38	2588	50	32	27	2583	48	53	8	2576
	Antares	E.	99	43	26	2578	98	4	1	2569	96	24	23	2560	94	44	33	2551
7	Aldebaran	W.	94	23	49	2479	96	5	32	2471	97	47	26	2464	99	29	30	2456
	Jupiter	W.	85	36	22	2472	87	18	14	2465	89	0	17	2458	90	42	29	2450
	Pollux	W.	50	19	1	2509	52	0	4	2499	53	41	19	2489	55	22	47	2482
	Regulus	W.	14	31	3	2587	16	10	16	2558	17	50	9	2535	19	30	34	2517
	Mars	E.	26	7	46	2491	24	26	20	2485	22	44	45	2479	21	3	2	2473
	Spica	E.	40	34	43	2556	38	54	47	2555	37	14	50	2555	35	34	53	2555
	Antares	E.	86	22	18	2506	84	41	16	2501	83	0	4	2494	81	18	42	2487
	Saturn	E.	113	59	18	2505	112	18	12	2497	110	36	54	2489	108	55	26	2482

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Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	138° 26′ 25″	3325	139° 50′ 8″	3317	141° 14′ 1″	3306	142° 38′ 7″	3296
	α Pegasi	W.	99 13 45	3353	100 36 55	3348	102 0 11	3343	103 23 33	3338
	α Arietis	W.	56 6 3	3143	57 33 21	3126	59 0 59	3110	60 28 57	3094
	Aldebaran	W.	23 38 23	2964	25 9 21	2952	26 40 34	2938	28 12 5	2926
	Pollux	E.	21 31 53	3106	20 3 50	3122	18 36 7	3147	17 8 54	3180
	Regulus	E.	56 51 21	2946	55 20 1	2937	53 48 29	2927	52 16 45	2918
	Mars	E.	96 41 31	2967	95 10 37	2957	93 39 30	2946	92 8 9	2935
	Spica	E.	110 48 1	2973	109 17 15	2963	107 46 16	2952	106 15 3	2942
2	α Pegasi	W.	110 21 33	3323	111 45 18	3322	113 9 4	3322	114 32 50	3323
	α Arietis	W.	67 53 36	3017	69 23 28	3003	70 53 37	2988	72 24 5	2973
	Aldebaran	W.	35 53 31	2865	37 26 35	2852	38 59 55	2841	40 33 30	2828
	Jupiter	W.	26 58 41	2851	28 32 3	2840	30 5 39	2828	31 39 30	2815
	Regulus	E.	44 34 56	2867	43 1 55	2857	41 28 41	2847	39 55 14	2837
	Mars	E.	84 27 57	2878	82 55 10	2866	81 22 8	2855	79 48 52	2843
	Spica	E.	98 35 30	2886	97 2 53	2874	95 30 1	2862	93 56 54	2851
3	α Arietis	W.	80 0 46	2906	81 32 57	2893	83 5 25	2881	84 38 8	2869
	Aldebaran	W.	48 25 22	2768	50 0 32	2756	51 35 58	2745	53 11 38	2732
	Jupiter	W.	39 32 40	2756	41 8 5	2745	42 43 45	2735	44 19 39	2722
	Regulus	E.	32 4 45	2788	30 30 1	2779	28 55 7	2772	27 20 2	2764
	Mars	E.	71 58 36	2782	70 23 45	2770	68 48 38	2759	67 13 16	2747
	Spica	E.	86 7 36	2793	84 32 59	2782	82 58 8	2771	81 23 2	2759
4	α Arietis	W.	92 25 36	2811	93 59 50	2800	95 34 18	2790	97 8 59	2780
	Aldebaran	W.	61 13 59	2674	62 51 14	2663	64 28 44	2652	66 6 28	2640
	Jupiter	W.	52 23 6	2665	54 0 33	2654	55 38 15	2643	57 16 11	2632
	Regulus	E.	19 22 35	2745	17 46 55	2750	16 11 21	2758	14 35 58	2775
	Mars	E.	59 12 27	2687	57 35 29	2676	55 58 17	2664	54 20 49	2652
	Spica	E.	73 23 49	2704	71 47 15	2694	70 10 27	2684	68 33 26	2674
5	α Arietis	W.	105 5 29	2735	106 41 22	2729	108 17 24	2722	109 53 34	2715
	Aldebaran	W.	74 18 55	2588	75 58 7	2577	77 37 34	2568	79 17 13	2557
	Jupiter	W.	65 29 34	2580	67 8 57	2569	68 48 34	2561	70 28 23	2550
	Pollux	W.	30 27 8	2660	32 4 42	2643	33 42 39	2627	35 20 57	2612
	Mars	E.	46 9 42	2598	44 30 44	2588	43 51 32	2579	41 12 8	2568
	Spica	E.	60 25 0	2627	58 46 42	2618	57 8 12	2610	55 29 31	2603
	Antares	E.	106 18 46	2619	104 40 17	2609	103 1 34	2599	101 22 37	2588
6	Aldebaran	W.	87 38 50	2511	89 19 48	2503	91 0 57	2495	92 42 17	2487
	Jupiter	W.	78 50 48	2504	80 31 55	2497	82 13 13	2488	83 54 43	2482
	Pollux	W.	43 37 11	2548	45 17 17	2538	46 57 37	2527	48 38 13	2518
	Mars	E.	32 51 42	2522	31 11 0	2513	29 30 5	2507	27 49 1	2499
	Spica	E.	47 13 40	2570	45 34 4	2566	43 54 22	2562	42 14 35	2559
	Antares	E.	93 4 30	2541	91 24 14	2533	89 43 47	2525	88 3 9	2516
7	Aldebaran	W.	101 11 45	2450	102 54 9	2442	104 36 44	2436	106 19 28	2431
	Jupiter	W.	92 24 52	2443	94 7 25	2437	95 50 7	2431	97 32 58	2424
	Pollux	W.	57 4 26	2472	58 46 18	2465	60 28 21	2458	62 10 33	2450
	Regulus	W.	21 11 24	2499	22 52 38	2486	24 34 11	2473	26 16 2	2461
	Mars	E.	19 21 11	2469	17 39 14	2465	15 57 12	2465	14 15 10	2465
	Spica	E.	33 54 56	2558	32 15 3	2561	30 35 15	2569	28 55 38	2578
	Antares	E.	79 37 11	2480	77 55 30	2473	76 13 39	2468	74 31 41	2462
	Saturn	E.	107 13 48	2475	105 31 59	2467	103 50 6	2461	102 7 52	2455

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Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
8	Aldebaran	W.	108° 2′ 19″	2423	109° 45′ 21″	2418	111° 28′ 30″	2412	113° 11′ 48″	2407
	Jupiter	W.	99 15 58	2417	100 59 8	2412	102 42 25	2406	104 25 51	2401
	Pollux	W.	63 52 57	2443	65 35 31	2437	67 18 13	2429	69 1 6	2424
	Regulus	W.	27 58 10	2451	29 40 32	2442	31 23 7	2433	33 5 54	2425
	Spica	E.	27 16 13	2591	25 37 6	2607	23 58 21	2631	22 20 8	2660
	Antares	E.	72 49 35	2456	71 7 20	2450	69 24 57	2445	67 42 27	2441
	Saturn	E.	100 25 35	2449	98 43 10	2442	97 0 35	2436	95 17 52	2430
	α Aquilæ	E.	116 30 42	3278	115 6 5	3249	113 40 54	3222	112 15 11	3196
	Sun	E.	143 21 36	2769	141 46 27	2759	140 11 5	2752	138 35 34	2746
9	Pollux	W.	77 37 34	2396	79 21 15	2391	81 5 3	2387	82 48 57	2382
	Regulus	W.	41 42 30	2391	43 26 17	2386	45 10 12	2380	46 54 15	2375
	Antares	E.	59 8 29	2422	57 25 26	2419	55 42 19	2417	53 59 9	2415
	Saturn	E.	86 42 19	2405	84 58 51	2400	83 15 16	2395	81 31 34	2391
	α Aquilæ	E.	104 59 40	3096	103 31 26	3081	102 . 1 53	3067	100 34 3	3054
	Sun	E.	130 35 51	2714	128 59 30	2710	127 23 3	2701	125 46 28	2696
10	Pollux	W.	91 29 59	2362	93 14 29	2359	94 59 2	2356	96 43 40	2353
	Regulus	W.	55 36 13	2353	57 20 55	2350	59 5 42	2346	60 50 35	2342
	Mars	W.	15 26 9	2363	17 10 37	2354	18 55 18	2347	20 40 9	2340
	Antares	E.	45 22 51	2412	43 39 34	2414	41 56 19	2417	40 13 8	2419
	Saturn	E.	72 51 38	2371	71 7 21	2368	69 23 1	2365	67 38 36	2362
	α Aquilæ	E.	93 6 42	3014	91 36 46	3009	90 6 45	3005	88 36 39	3004
	Sun	E.	117 41 59	2677	116 4 48	2673	114 27 32	2669	112 50 10	2666
11	Regulus	W.	69 36 12	2327	71 21 32	2324	73 6 57	2322	74 52 25	2319
	Mars	W.	29 26 28	2317	31 12 3	2313	32 57 44	2309	34 43 30	2307
	Spica	W.	16 53 41	2708	18 30 10	2640	20 8 11	2588	21 47 23	2546
	Antares	E.	31 38 42	2453	29 56 22	2465	28 14 20	2482	26 32 41	2500
	Saturn	E.	58 55 23	2347	57 10 32	2345	55 25 38	2342	53 40 40	2339
	α Aquilæ	E.	81 6 2	3011	79 36 3	3017	78 6 11	3024	76 36 28	3032
	Sun	E.	104 42 16	2650	103 4 29	2647	101 26 38	2644	99 48 43	2643
12	Regulus	W.	83 40 36	2309	85 26 22	2307	87 12 11	2305	88 58 3	2304
	Mars	W.	43 33 27	2292	45 19 38	2289	47 5 53	2287	48 52 12	2285
	Spica	W.	30 14 39	2428	31 57 34	2415	33 40 48	2403	35 24 18	2393
	Saturn	E.	44 55 3	2330	43 9 47	2328	41 24 29	2326	39 39 8	2326
	α Aquilæ	E.	69 11 3	3098	67 42 51	3117	66 15 2	3138	64 47 38	3161
	Sun	E.	91 38 25	2632	90 0 14	2630	88 22 0	2628	86 43 43	2627
13	Regulus	W.	97 47 47	2299	99 33 48	2298	101 19 50	2298	103 5 53	2298
	Mars	W.	57 44 26	2277	59 30 59	2275	61 17 35	2274	63 4 13	2273
	Spica	W.	44 4 57	2358	45 49 32	2353	47 34 14	2350	49 19 0	2346
	Saturn	E.	30 51 58	2320	29 6 28	2320	27 20 57	2319	25 35 25	2319
	α Aquilæ	E.	57 38 46	3323	56 15 1	3366	54 52 6	3415	53 30 6	3467
	Sun	E.	78 31 57	2622	76 53 32	2622	75 15 7	2621	73 36 41	2621
14	Regulus	W.	111 56 5	2299	113 42 6	2300	115 28 6	2301	117 14 4	2302
	Mars	W.	71 57 37	2270	73 44 20	2270	75 31 3	2272	77 17 44	2271
	Spica	W.	58 4 1	2335	59 49 9	2334	61 34 19	2334	63 19 29	2333
	Antares	W.	13 33 19	2937	15 4 51	2806	16 39 11	2709	18 15 39	2638
	Sun	E.	65 24 31	2623	63 46 7	2624	62 7 44	2626	60 29 24	2627
15	Mars	W.	86 10 59	2277	87 57 33	2278	89 44 5	2281	91 30 33	2283
	Spica	W.	72 5 21	2336	73 50 28	2338	75 35 32	2340	77 20 33	2342

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Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L of Diff.	XXI^{h}.	P. L. of Diff.
8	Aldebaran	W.	114° 55′ 13″	2401	116° 38′ 46″	2396	118° 22′ 26″	2391	120° 6′ 14″	2386
	Jupiter	W.	106 9 24	2395	107 53 6	2391	109 36 54	2386	111 20 49	2380
	Pollux	W.	70 44 7	2417	72 27 17	2413	74 10 33	2405	75 54 0	2401
	Regulus	W.	34 48 53	2417	36 32 3	2410	38 15 23	2405	39 58 51	2397
	Spica	E.	20 42 35	2700	19 5 55	2752	17 30 24	2825	15 56 29	2924
	Antares	E.	65 59 51	2436	64 17 8	2433	62 34 20	2429	60 51 27	2426
	Saturn	E.	93 35 0	2425	91 52 1	2419	90 8 54	2415	88 25 40	2410
	α Aquilæ	E.	110 48 57	3174	109 22 17	3149	107 55 7	3131	106 27 35	3112
	Sun	E.	136 59 55	2738	135 24 6	2733	133 48 10	2725	132 12 4	2720
9	Pollux	W.	84 32 58	2378	86 17 5	2373	88 1 18	2370	89 45 36	2366
	Regulus	W.	48 38 25	2371	50 22 42	2366	52 7 6	2362	53 51 36	2357
	Antares	E.	52 15 56	2414	50 32 41	2413	48 49 25	2412	47 6 8	2412
	Saturn	E.	79 47 47	2387	78 3 53	2382	76 19 53	2379	74 35 48	2375
	α Aquilæ	E.	99 4 58	3045	97 35 41	3034	96 6 11	3026	94 36 31	3019
	Sun	E.	124 9 46	2694	122 32 58	2690	120 56 5	2685	119 19 5	2681
10	Pollux	W.	98 28 23	2350	100 13 10	2347	101 58 1	2345	103 42 55	2342
	Regulus	W.	62 35 33	2339	64 20 36	2335	66 5 44	2333	67 50 56	2330
	Mars	W.	22 25 10	2335	24 10 19	2330	25 55 35	2325	27 40 58	2320
	Antares	E.	38 30 0	2422	36 46 57	2428	35 4 2	2434	33 21 16	2443
	Saturn	E.	65 54 7	2357	64 9 31	2356	62 24 53	2353	60 40 10	2350
	α Aquilæ	E.	87 6 31	3003	85 36 22	3003	84 6 13	3005	82 36 6	3007
	Sun	E.	111 12 44	2662	109 35 13	2659	107 57 38	2656	106 19 59	2653
11	Regulus	W.	76 37 57	2317	78 23 32	2315	80 9 10	2313	81 54 51	2310
	Mars	W.	36 29 20	2302	38 15 16	2300	40 1 16	2298	41 47 19	2294
	Spica	W.	23 27 32	2512	25 8 28	2485	26 50 2	2463	28 32 7	2444
	Antares	E.	24 51 28	2525	23 10 50	2557	21 30 56	2598	19 51 58	2650
	Saturn	E.	51 55 38	2338	50 10 34	2335	48 25 26	2334	46 40 16	2332
	α Aquilæ	E.	75 6 55	3042	73 37 34	3053	72 8 27	3066	70 39 36	3081
	Sun	E.	98 10 46	2640	96 32 45	2638	94 54 41	2636	93 16 35	2633
12	Regulus	W.	90 43 56	2303	92 29 51	2302	94 15 48	2300	96 1 48	2300
	Mars	W.	50 38 33	2283	52 24 57	2281	54 11 24	2279	55 57 54	2278
	Spica	W.	37 8 3	2384	38 52 1	2376	40 36 10	2369	42 20 29	2363
	Saturn	E.	37 53 46	2324	36 8 22	2323	34 22 56	2321	32 37 27	2321
	α Aquilæ	E.	63 20 42	3188	61 54 18	3217	60 28 29	3247	59 3 16	3284
	Sun	E.	85 5 25	2626	83 27 5	2625	81 48 44	2624	80 10 21	2623
13	Regulus	W.	104 51 55	2297	106 37 59	2298	108 24 1	2298	110 10 4	2299
	Mars	W.	64 50 52	2272	66 37 32	2272	68 24 13	2271	70 10 55	2271
	Spica	W.	51 3 53	2344	52 48 49	2340	54 33 50	2338	56 18 54	2336
	Saturn	E.	23 49 53	2319	22 4 21	2319	20 18 49	2319	18 33 17	2319
	α Aquilæ	E.	52 9 5	3525	50 49 9	3589	49 30 23	3662	48 12 55	3742
	Sun	E.	71 58 14	2621	70 19 48	2621	68 41 21	2622	67 2 56	2622
14	Regulus	W.	119 0 0	2303	120 45 55	2306	122 31 46	2307	124 17 35	2309
	Mars	W.	79 4 26	2272	80 51 6	2272	82 37 46	2274	84 24 23	2275
	Spica	W.	65 4 40	2333	66 49 52	2333	68 35 3	2335	70 20 12	2335
	Antares	W.	19 53 42	2585	21 32 58	2544	23 13 10	2512	24 54 6	2487
	Sun	E.	58 51 6	2628	57 12 49	2631	55 34 36	2634	53 56 27	2635
15	Mars	W.	93 16 57	2285	95 3 19	2289	96 49 35	2291	98 35 48	2294
	Spica	W.	79 5 31	2345	80 50 25	2347	82 35 16	2352	84 20 0	2354

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Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
15	Antares	W.	26° 35′ 38″	2467	28° 17′ 37″	2450	30° 0′ 0″	2439	31° 42′ 39″	2429
	Sun	E.	52 18 20	2638	50 40 17	2642	49 2 19	2646	47 24 27	2649
16	Mars	W	100 21 57	2298	102 7 59	2302	103 53 56	2305	105 39 48	2311
	Spica	W.	86 4 41	2359	87 49 15	2362	89 33 44	2368	91 18 5	2372
	Antares	W.	40 18 35	2405	42 2 2	2405	43 45 30	2405	45 28 58	2405
	Sun	E.	39 16 34	2676	37 39 22	2683	36 2 19	2690	34 25 26	2698
21	Sun	W.	23 57 35	3128	25 25 11	3134	26 52 39	3144	28 19 55	3153
	α Arietis	E.	42 29 8	3041	40 59 46	3075	39 31 6	3114	38 3 12	3155
	Aldebaran	E.	71 42 57	2717	70 6 40	2729	68 30 39	2744	66 54 57	2756
	Jupiter	E.	80 41 30	2725	79 5 24	2738	77 29 35	2751	75 54 3	2765
	Pollux	E.	115 51 56	2735	114 16 3	2747	112 40 26	2760	111 5 5	2773
22	Sun	W.	35 33 11	3209	36 59 10	3220	38 24 55	3232	39 50 26	3243
	α Arietis	E.	30 57 32	3426	29 35 45	3501	28 15 22	3586	26 56 32	3683
	Aldebaran	E.	59 0 42	2822	57 26 43	2834	55 52 59	2848	54 19 33	2859
	Jupiter	E.	68 0 45	2830	66 26 56	2843	64 53 24	2855	63 20 7	2868
	Pollux	E.	103 12 31	2835	101 38 48	2848	100 5 22	2859	98 32 10	2872
23	Sun	W.	46 54 39	3301	48 18 49	3312	49 42 47	3323	51 6 32	3333
	Aldebaran	E.	46 36 14	2920	45 4 20	2931	43 32 41	2942	42 1 16	2953
	Jupiter	E.	55 37 40	2927	54 5 56	2938	52 34 25	2948	51 3 7	2960
	Pollux	E.	90 50 1	2929	89 18 19	2939	87 46 50	2950	86 15 35	2961
24	Sun	W.	58 2 21	3382	59 24 58	3391	60 47 25	3398	62 9 44	3407
	Aldebaran	E.	34 27 32	3005	32 57 26	3015	31 27 32	3025	29 57 50	3034
	Jupiter	E.	43 29 56	3008	41 59 53	3017	40 30 1	3025	39 0 19	3033
	Pollux	E.	78 42 27	3008	77 12 24	3018	75 42 33	3025	74 12 51	3032
	Regulus	E.	114 35 47	2997	113 5 30	3005	111 35 23	3012	110 5 26	3020
25	Sun	W.	68 59 9	3440	70 20 40	3444	71 42 7	3451	73 3 26	3454
	Aldebaran	E.	22 32 20	3084	21 3 51	3095	19 35 35	3107	18 7 34	3120
	Jupiter	E.	31 34 9	3068	30 5 20	3073	28 36 38	3078	27 8 2	3083
	Pollux	E.	66 46 37	3066	65 17 46	3072	63 49 2	3078	62 20 25	3082
	Regulus	E.	102 37 49	3051	101 8 39	3056	99 39 36	3060	98 10 38	3065
26	Sun	W.	79 49 4	3469	81 10 3	3470	82 31 1	3471	83 51 57	3471
	α Arietis	W.	25 8 53	3942	26 21 30	3856	27 35 34	3783	28 50 54	3718
	Pollux	E.	54 58 37	3101	53 30 28	3102	52 2 21	3104	50 34 16	3107
	Regulus	E.	90 46 51	3078	89 18 14	3079	87 49 39	3080	86 21 5	3080
27	Sun	W.	90 36 48	3464	91 57 52	3462	93 18 59	3459	94 40 9	3454
	α Arietis	W.	35 21 59	3498	36 42 25	3466	38 3 27	3438	39 25 1	3410
	Pollux	E.	43 14 18	3110	41 46 20	3110	40 18 22	3110	38 50 24	3109
	Regulus	E.	78 58 7	3074	77 29 26	3072	76 0 42	3069	74 31 54	3065
	Mars	E.	116 58 19	2982	115 27 44	2979	113 57 5	2975	112 26 21	2971
28	Sun	W.	101 27 21	3427	102 49 7	3420	104 11 1	3412	105 33 4	3405
	α Arietis	W.	46 19 52	3300	47 44 4	3280	49 8 39	3263	50 33 34	3245
	Aldebaran	W.	13 32 18	3125	14 59 57	3101	16 28 5	3082	17 56 36	3065
	Pollux	E.	31 30 24	3108	30 2 24	3108	28 34 24	3109	27 6 25	3112
	Regulus	E.	67 6 37	3040	65 37 14	3034	64 7 43	3027	62 38 4	3020
	Mars	E.	104 51 11	2943	103 19 47	2936	101 48 14	2928	100 16 31	2921

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
15	Antares	W.	33° 25′ 33″	2421	35° 8′ 38″	2415	36° 51′ 51″	2411	38° 35′ 10″	2407
	Sun	E.	45 46 39	2654	44 8 57	2660	42 31 23	2663	40 53 54	2670
16	Mars	W.	107 25 32	2315	109 11 10	2320	110 56 40	2325	112 42 3	2331
	Spica	W.	93 2 20	2378	94 46 27	2384	96 30 25	2389	98 14 15	2396
	Antares	W.	47 12 25	2407	48 55 50	2410	50 39 11	2412	52 22 28	2416
	Sun	E.	32 48 44	2707	31 12 14	2717	29 35 57	2729	27 59 55	2741
21	Sun	W.	29 47 0	3164	31 13 52	3175	32 40 31	3185	34 6 58	3197
	α Arietis	E.	36 36 9	3198	35 9 58	3247	33 44 45	3300	32 20 34	3360
	Aldebaran	E.	65 19 31	2769	63 44 23	2782	62 9 32	2796	60 34 59	2808
	Jupiter	E.	74 18 49	2779	72 43 53	2791	71 9 13	2804	69 34 50	2818
	Pollux	E.	109 30 2	2785	107 55 15	2798	106 20 44	2810	104 46 29	2823
22	Sun	W.	41 15 44	3255	42 40 48	3267	44 5 38	3277	45 30 16	3290
	α Arietis	E.	25 39 27	3794	24 24 19	3925	23 11 25	4080	22 1 4	4264
	Aldebaran	E.	52 46 22	2872	51 13 27	2883	49 40 47	2896	48 8 23	2908
	Jupiter	E.	61 47 7	2880	60 14 22	2892	58 41 53	2905	57 9 40	2915
	Pollux	E.	96 59 15	2883	95 26 34	2895	93 54 9	2906	92 21 58	2917
23	Sun	W.	52 30 5	3344	53 53 26	3354	55 16 35	3364	56 39 33	3372
	Aldebaran	E.	40 30 4	2964	38 59 6	2975	37 28 22	2985	35 57 51	2995
	Jupiter	E.	49 32 4	2970	48 1 14	2980	46 30 36	2989	45 0 10	2999
	Pollux	E.	84 44 33	2971	83 13 44	2981	81 43 7	2990	80 12 42	2998
24	Sun	W.	63 31 53	3415	64 53 53	3422	66 15 45	3428	67 37 30	3433
	Aldebaran	E.	28 28 20	3044	26 59 2	3054	25 29 56	3064	24 1 2	3073
	Jupiter	E.	37 30 47	3040	36 1 24	3048	34 32 11	3055	33 3 6	3061
	Pollux	E.	72 43 18	3040	71 13 55	3047	69 44 41	3053	68 15 34	3061
	Regulus	E.	108 35 38	3027	107 5 59	3034	105 36 28	3040	104 7 5	3046
25	Sun	W.	74 24 41	3458	75 45 52	3461	77 7 0	3465	78 28 3	3467
	Aldebaran	E.	16 39 49	3135	15 12 22	3155	13 45 19	3180	12 18 46	3212
	Jupiter	E.	25 39 32	3089	24 11 9	3093	22 42 51	3096	21 14 37	3101
	Pollux	E.	60 51 54	3087	59 23 28	3091	57 55 7	3094	56 26 50	3097
	Regulus	E.	96 41 45	3068	95 12 56	3072	93 44 12	3073	92 15 30	3076
26	Sun	W.	85 12 53	3471	86 33 50	3471	87 54 47	3468	89 15 47	3467
	α Arietis	W.	30 7 22	3663	31 24 48	3615	32 43 6	3572	34 2 11	3533
	Pollux	E.	49 6 15	3107	47 38 14	3109	46 10 15	3110	44 42 17	3109
	Regulus	E.	84 52 31	3080	83 23 57	3079	81 55 22	3078	80 26 45	3077
27	Sun	W.	96 1 25	3450	97 22 45	3445	98 44 11	3439	100 5 43	3434
	α Arietis	W.	40 47 6	3386	42 9 39	3363	43 32 38	3340	44 56 3	3319
	Pollux	E.	37 22 25	3109	35 54 26	3108	34 26 26	3107	32 58 25	3107
	Regulus	E.	73 3 2	3060	71 34 4	3057	70 5 2	3052	68 35 53	3046
	Mars	E.	110 55 32	2966	109 24 37	2962	107 53 36	2955	106 22 27	2950
28	Sun	W.	106 55 15	3396	108 17 36	3387	109 40 7	3378	111 2 49	3368
	α Arietis	W.	51 58 50	3226	53 24 28	3211	54 50 24	3193	56 16 41	3178
	Aldebaran	W.	19 25 28	3049	20 54 40	3034	22 24 10	3022	23 53 56	3007
	Pollux	E.	25 58 30	3116	24 10 40	3122	22 42 57	3130	21 15 24	3143
	Regulus	E.	61 8 16	3012	59 38 18	3004	58 8 10	2996	56 37 52	2987
	Mars	E.	98 44 39	2912	97 12 36	2904	95 40 22	2894	94 7 56	2885

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of the Semidiameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semidiameter.				
		h m s	s	° ′ ″	″	′ ″		s	m s	s
Wed.	1	22 48 1.44	9.361	S. 7 38 3.3	+56.92	16 10.39		65.43	12 35.62	0.494
Thur.	2	22 51 45.85	9.340	7 15 14.0	57.19	16 10.15		65.36	12 23.51	0.515
Frid.	3	22 55 29.75	9.319	6 52 18.6	57.43	16 9.91		65.29	12 10.88	0.536
Sat.	4	22 59 13.15	9.300	6 29 17.4	57.66	16 9.66		65.22	11 57.77	0.555
Sun.	5	23 2 56.09	9.280	6 6 10.8	57.87	16 9.41		65.16	11 44.20	0.574
Mon.	6	23 6 38.58	9.262	5 42 59.4	58.07	16 9.17		65.10	11 30.18	0.592
Tues.	7	23 10 20.66	9.244	5 19 43.4	58.26	16 8.91		65.04	11 15.74	0.610
Wed.	8	23 14 2.34	9.228	4 56 23.1	58.42	16 8.65		64.98	11 0.91	0.626
Thur.	9	23 17 43.64	9.213	4 32 59.0	58.57	16 8.39		64.93	10 45.70	0.641
Frid.	10	23 21 24.61	9.199	4 9 31.5	58.71	16 8.12		64.88	10 30.16	0.655
Sat.	11	23 25 5.25	9.186	3 46 0.7	58.84	16 7.85		64.83	10 14.29	0.668
Sun.	12	23 28 45.59	9.173	3 22 27.2	58.95	16 7.58		64.78	9 58.11	0.681
Mon.	13	23 32 25.64	9.162	2 58 51.4	59.05	16 7.31		64.74	9 41.65	0.692
Tues.	14	23 36 5.43	9.152	2 35 13.5	59.12	16 7.04		64.70	9 24.93	0.702
Wed.	15	23 39 44.98	9.143	2 11 34.0	59.18	16 6.76		64.66	9 7.98	0.711
Thur.	16	23 43 24.31	9.135	1 47 53.0	59.23	16 6.49		64.63	8 50.81	0.719
Frid.	17	23 47 3.44	9.126	1 24 11.1	59.27	16 6.21		64.60	8 33.43	0.728
Sat.	18	23 50 42.37	9.119	1 0 28.5	59.29	16 5.94		64.56	8 15.87	0.735
Sun.	19	23 54 21.14	9.112	0 36 45.7	59.29	16 5.66		64.54	7 58.14	0.742
Mon.	20	23 57 59.78	9.106	S. 0 13 3.1	59.28	16 5.39		64.52	7 40.26	0.748
Tues.	21	0 1 38.28	9.101	N. 0 10 38.9	59.24	16 5.11		64.50	7 22.25	0.753
Wed.	22	0 5 16.66	9.097	0 34 20.0	59.19	16 4.84		64.48	7 4.13	0.757
Thur.	23	0 8 54.94	9.093	0 57 59.7	59.13	16 4.56		64.47	6 45.91	0.761
Frid.	24	0 12 33.13	9.089	1 21 37.7	59.05	16 4.29		64.46	6 27.60	0.765
Sat.	25	0 16 11.25	9.087	1 45 13.6	58.96	16 4.02		64.46	6 9.22	0.767
Sun.	26	0 19 49.33	9.086	2 8 47.0	58.84	16 3.75		64.46	5 50.81	0.768
Mon.	27	0 23 27.38	9.085	2 32 17.6	58.71	16 3.48		64.46	5 32.36	0.769
Tues.	28	0 27 5.43	9.085	2 55 45.0	58.57	16 3.21		64.46	5 13.89	0.769
Wed.	29	0 30 43.49	9.086	3 19 8.9	58.42	16 2.94		64.47	4 55.44	0.768
Thur.	30	0 34 21.56	9.088	3 42 28.8	58.25	16 2.67		64.48	4 37.02	0.766
Frid.	31	0 37 59.68	9.091	4 5 44.5	58.06	16 2.39		64.49	4 18.64	0.763
Sat.	32	0 41 37.89	9.094	N. 4 28 55.7	+57.86	16 2.12		64.50	4 0.34	0.760

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subt'd from Mean Time.*	Diff. for 1 hour.	Sidereal Time, or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Wed.	1	22 47 59.49	9.362	S. 7 38 15.3	+56.93	12 35.73	0.494	22 35 23.76
Thur.	2	22 51 43.93	9.341	7 15 25.8	57.20	12 23.61	0.515	22 39 20.32
Frid.	3	22 55 27.86	9.320	6 52 30.2	57.44	12 10.99	0.536	22 43 16.87
Sat.	4	22 59 11.30	9.301	6 29 28.8	57.67	11 57.88	0.555	22 47 13.42
Sun.	5	23 2 54.28	9.282	6 6 22.1	57.88	11 44.31	0.574	22 51 9.97
Mon.	6	23 6 36.81	9.264	5 43 10.5	58.08	11 30.28	0.592	22 55 6.53
Tues.	7	23 10 18.93	9.246	5 19 54.3	58.27	11 15.85	0.610	22 59 3.08
Wed.	8	23 14 0.65	9.230	4 56 33.8	58.43	11 1.02	0.626	23 2 59.63
Thur.	9	23 17 42.00	9.215	4 33 9.5	58.58	10 45.81	0.641	23 6 56.19
Frid.	10	23 21 23.01	9.201	4 9 41.7	58.72	10 30.27	0.655	23 10 52.74
Sat.	11	23 25 3.69	9.188	3 46 10.7	58.85	10 14.40	0.668	23 14 49.29
Sun.	12	23 28 44.07	9.175	3 22 37.0	58.96	9 58.22	0.681	23 18 45.85
Mon.	13	23 32 24.16	9.164	2 59 0.9	59.06	9 41.76	0.692	23 22 42.40
Tues.	14	23 36 3.99	9.154	2 35 22.7	59.13	9 25.04	0.702	23 26 38.95
Wed.	15	23 39 43.59	9.145	2 11 42.9	59.19	9 8.09	0.711	23 30 35.50
Thur.	16	23 43 22.97	9.137	1 48 1.6	59.24	8 50.92	0.719	23 34 32.05
Frid.	17	23 47 2.15	9.128	1 24 19.4	59.28	8 33.54	0.728	23 38 28.61
Sat.	18	23 50 41.13	9.121	1 0 36.6	59.30	8 15.97	0.735	23 42 25.16
Sun.	19	23 54 19.95	9.114	0 36 53.5	59.30	7 58.24	0.742	23 46 21.71
Mon.	20	23 57 58.63	9.108	S. 0 13 10.6	59.29	7 40.36	0.748	23 50 18.27
Tues.	21	0 1 37.17	9.103	N. 0 10 31.7	59.25	7 22.35	0.753	23 54 14.82
Wed.	22	0 5 15.60	9.099	0 34 13.1	59.20	7 4.23	0.757	23 58 11.37
Thur.	23	0 8 53.92	9.095	0 57 53.1	59.14	6 46.00	0.761	0 2 7.92
Frid.	24	0 12 32.16	9.091	1 21 31.4	59.06	6 27.68	0.765	0 6 4.48
Sat.	25	0 16 10.33	9.089	1 45 7.6	58.97	6 9.30	0.767	0 10 1.03
Sun.	26	0 19 48.46	9.088	2 8 41.4	58.85	5 50.88	0.768	0 13 57.58
Mon.	27	0 23 26.56	9.087	2 32 12.3	58.72	5 32.43	0.769	0 17 54.13
Tues.	28	0 27 4.65	9.087	2 55 40.0	58.58	5 13.96	0.769	0 21 50.69
Wed.	29	0 30 42.75	9.088	3 19 4.1	58.43	4 55.51	0.768	0 25 47.24
Thur.	30	0 34 20.87	9.090	3 42 24.3	58.26	4 37.08	0.766	0 29 43.79
Frid.	31	0 37 59.04	9.093	4 5 40.4	58.07	4 18.69	0.763	0 33 40.35
Sat.	32	0 41 37.29	9.096	N. 4 28 51.9	+58.87	4 0.39	0.760	0 37 36.90

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour $+9^s.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	60	340 29 59.7	30 7.9	150.38	−0.03	9.9962304	+44.3	1 24 22.36
2	61	341 30 7.7	30 15.8	150.30	+0.11	.9963376	44.9	1 20 26.46
3	62	342 30 13.7	30 21.7	150.21	0.24	.9964462	45.5	1 16 30.55
4	63	343 30 17.7	30 25.6	150.13	0.35	.9965563	46.1	1 12 34.64
5	64	344 30 19.8	30 27.6	150.04	0.44	.9966680	46.8	1 8 38.74
6	65	345 30 19.9	30 27.6	149.96	0.50	.9967812	47.4	1 4 42.84
7	66	346 30 18.1	30 25.7	149.89	0.53	.9968958	48.0	1 0 46.93
8	67	347 30 14.5	30 22.0	149.81	0.54	.9970119	48.6	0 56 51.02
9	68	348 30 9.0	30 16.4	149.73	0.53	.9971293	49.2	0 52 55.11
10	69	349 30 1.8	30 9.1	149.66	0.49	.9972480	49.7	0 48 59.21
11	70	350 29 52.9	30 0.1	149.59	0.41	.9973680	50.2	0 45 3.30
12	71	351 29 42.3	29 49.4	149.52	0.31	.9974890	50.6	0 41 7.39
13	72	352 29 30.0	29 37.0	149.45	0.19	.9976108	50.9	0 37 11.48
14	73	353 29 16.0	29 22.9	149.38	+0.06	.9977333	51.2	0 33 15.58
15	74	354 29 0.3	29 7.1	149.31	−0.07	.9978565	51.4	0 29 19.67
16	75	355 28 42.9	28 49.6	149.24	0.20	.9979799	51.5	0 25 23.76
17	76	356 28 23.8	28 30.4	149.17	0.32	.9981036	51.6	0 21 27.86
18	77	357 28 2.9	28 9.4	149.09	0.43	.9982276	51.6	0 17 31.96
19	78	358 27 40.1	27 46.5	149.01	0.52	.9983516	51.6	0 13 36.05
20	79	359 27 15.4	27 21.7	148.93	0.58	.9984753	51.5	0 9 40.14
21	80	0 26 48.7	26 55.0	148.85	0.60	.9985988	51.4	0 5 44.23
22	81	1 26 20.0	26 26.2	148.77	0.60	.9987220	51.3	0 1 48.33 23 57 52.42
23	82	2 25 49.3	25 55.4	148.68	0.57	.9988449	51.1	23 53 56.51
24	83	3 25 16.4	25 22.4	148.59	0.50	.9989675	51.0	23 50 0.60
25	84	4 24 41.2	24 47.1	148.49	0.41	.9990899	51.0	23 46 4.70
26	85	5 24 3.7	24 9.5	148.39	0.31	.9992121	50.9	23 42 8.79
27	86	6 23 23.9	23 29.6	148.29	0.19	.9993342	50.8	23 38 12.88
28	87	7 22 41.8	22 47.4	148.19	−0.06	.9994562	50.8	23 34 16.98
29	88	8 21 57.3	22 2.8	148.10	+0.07	.9995783	50.9	23 30 21.08
30	89	9 21 10.5	21 15.9	148.00	0.20	.9997005	51.0	23 26 25.17
31	90	10 20 21.4	20 26.8	147.91	0.33	.9998230	51.1	23 22 29.26
32	91	11 19 30.1	19 35.4	147.81	+0.43	9.9999459	+51.2	23 18 33.35

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour
−9s.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 58.2	15 2.1	54 49.6	+1.10	55 4.0	+1.28	7 53.3	2.11	9.9
2	15 6.5	15 11.5	55 20.4	1.45	55 38.6	1.58	8 44.8	2.17	10.9
3	15 16.9	15 22.5	55 58.3	1.69	56 19.1	1.77	9 37.0	2.18	11.9
4	15 28.4	15 34.4	56 40.7	1.82	57 2.6	1.83	10 29.2	2.17	12.9
5	15 40.4	15 46.2	57 24.5	1.81	57 45.9	1.75	11 20.9	2.13	13.9
6	15 51.7	15 56.9	58 6.4	1.65	58 25.5	1.52	12 11.7	2.10	14.9
7	16 1.7	16 5.9	58 42.9	1.37	58 58.2	1.19	13 1.9	2.09	15.9
8	16 9.4	16 12.3	59 11.3	0.99	59 21.9	0.78	13 52.1	2.10	16.9
9	16 14.5	16 16.0	59 30.0	0.57	59 35.5	+0.36	14 42.8	2.14	17.9
10	16 16.8	16 17.0	59 38.6	+0.15	59 39.2	–0.04	15 34.9	2.21	18.9
11	16 16.6	16 15.6	59 37.7	–0.21	59 34.2	0.37	16 29.3	2.31	19.9
12	16 14.2	16 12.4	59 28.9	0.50	59 22.2	0.62	17 25.7	2.40	20.9
13	16 10.2	16 7.7	59 14.1	0.72	59 5.0	0.80	18 24.0	2.45	21.9
14	16 5.0	16 2.0	58 54.9	0.87	58 44.1	0.93	19 22.9	2.44	22.9
15	15 58.9	15 55.6	58 32.7	0.98	58 20.7	1.02	20 21.0	2.38	23.9
16	15 52.2	15 48.7	58 8.2	1.06	57 55.2	1.10	21 16.8	2.27	24.9
17	15 45.1	15 41.3	57 41.8	1.14	57 28.0	1.17	22 9.6	2.13	25.9
18	15 37.4	15 33.5	57 13.8	1.20	56 59.2	1.22	22 59.2	2.00	26.9
19	15 29.4	15 25.3	56 44.4	1.24	56 29.4	1.25	23 45.9	1.90	27.9
20	15 21.2	15 17.1	56 14.3	1.26	55 59.3	1.25	6		28.9
21	15 13.1	15 9.2	55 44.5	1.22	55 30.0	1.18	0 30.6	1.82	0.3
22	15 5.4	15 1.8	55 16.1	1.13	55 2.9	1.06	1 13.8	1.78	1.3
23	14 58.5	14 55.5	54 50.7	0.97	54 39.7	0.86	1 56.6	1.78	2.3
24	14 52.9	14 50.7	54 30.1	0.73	54 22.2	0.59	2 39.5	1.81	3.3
25	14 49.0	14 47.9	54 16.0	0.43	54 11.8	–0.26	3 23.4	1.85	4.3
26	14 47.3	14 47.4	54 9.8	–0.07	54 10.1	+0.12	4 8.7	1.92	5.3
27	14 48.2	14 49.6	54 12.8	+0.33	54 18.1	0.54	4 55.8	2.00	6.3
28	14 51.7	14 54.4	54 25.7	0.75	54 36.0	0.96	5 44.5	2.07	7.3
29	14 57.9	15 2.1	54 48.8	1.17	55 4.1	1.37	6 34.7	2.12	8.3
30	15 6.9	15 12.3	55 21.7	1.56	55 41.5	1.74	7 25.8	2.14	9.3
31	15 18.3	15 24.7	56 3.4	1.89	56 27.0	2.02	8 17.2	2.14	10.3
32	15 31.4	15 38.5	56 51.8	+2.12	57 17.6	+2.18	9 8.4	2.12	11.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 12 42.07	2.1872	N.22 58 17.8	2.014
1	6 14 53.39	2.1899	23 0 15.2	1.903
2	6 17 4.87	2.1925	23 2 6.1	1.791
3	6 19 16.51	2.1951	23 3 50.2	1.678
4	6 21 28.30	2.1977	23 5 27.6	1.565
5	6 23 40.24	2.2003	23 6 58.2	1.452
6	6 25 52.33	2.2028	23 8 22.0	1.339
7	6 28 4.57	2.2053	23 9 39.0	1.225
8	6 30 16.96	2.2077	23 10 49.1	1.111
9	6 32 29.49	2.2101	23 11 52.3	0.996
10	6 34 42.17	2.2125	23 12 48.6	0.881
11	6 36 54.99	2.2148	23 13 37.9	0.765
12	6 39 7.95	2.2171	23 14 20.2	0.649
13	6 41 21.05	2.2193	23 14 55.6	0.532
14	6 43 34.28	2.2215	23 15 24.0	0.415
15	6 45 47.63	2.2236	23 15 45.4	0.298
16	6 48 1.11	2.2257	23 15 59.7	0.180
17	6 50 14.71	2.2277	23 16 6.9	+0.062
18	6 52 28.43	2.2297	23 16 7.0	−0.056
19	6 54 42.27	2.2316	23 16 0.0	0.175
20	6 56 56.23	2.2335	23 15 46.0	0.293
21	6 59 10.30	2.2354	23 15 24.9	0.412
22	7 1 24.48	2.2372	23 14 56.7	0.531
23	7 3 38.76	2.2390	N.23 14 21.3	0.650

THURSDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 5 53.15	2.2407	N.23 13 38.7	0.770
1	7 8 7.64	2.2424	23 12 48.8	0.890
2	7 10 22.23	2.2440	23 11 51.7	1.011
3	7 12 36.92	2.2456	23 10 47.4	1.132
4	7 14 51.70	2.2471	23 9 35.8	1.253
5	7 17 6.57	2.2486	23 8 17.0	1.374
6	7 19 21.53	2.2500	23 6 50.9	1.495
7	7 21 36.57	2.2514	23 5 17.5	1.617
8	7 23 51.69	2.2527	23 3 36.8	1.738
9	7 26 6.90	2.2540	23 1 48.8	1.860
10	7 28 22.19	2.2552	22 59 53.4	1.982
11	7 30 37.55	2.2564	22 57 50.8	2.104
12	7 32 52.97	2.2575	22 55 40.9	2.226
13	7 35 8.46	2.2586	22 53 23.6	2.348
14	7 37 24.01	2.2596	22 50 58.9	2.470
15	7 39 39.62	2.2606	22 48 26.9	2.593
16	7 41 55.29	2.2615	22 45 47.5	2.715
17	7 44 11.01	2.2623	22 43 0.8	2.838
18	7 46 26.78	2.2631	22 40 6.7	2.960
19	7 48 42.58	2.2638	22 37 5.3	3.083
20	7 50 58.43	2.2645	22 33 56.6	3.206
21	7 53 14.32	2.2651	22 30 40.5	3.329
22	7 55 30.25	2.2657	22 27 17.1	3.452
23	7 57 46.21	2.2663	22 23 46.3	3.575
24	8 0 2.20	2.2668	N.22 20 8.1	3.698

FRIDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 0 2.20	2.2668	N.22 20 8.1	3.698
1	8 2 18.22	2.2673	22 16 22.6	3.820
2	8 4 34.27	2.2677	22 12 29.7	3.943
3	8 6 50.34	2.2680	22 8 29.5	4.065
4	8 9 6.43	2.2683	22 4 22.0	4.188
5	8 11 22.54	2.2685	22 0 7.1	4.310
6	8 13 38.67	2.2687	21 55 44.9	4.432
7	8 15 54.81	2.2689	21 51 15.3	4.554
8	8 18 10.95	2.2690	21 46 38.4	4.676
9	8 20 27.09	2.2690	21 41 54.1	4.797
10	8 22 43.23	2.2690	21 37 2.5	4.919
11	8 24 59.37	2.2690	21 32 3.7	5.040
12	8 27 15.51	2.2689	21 26 57.6	5.161
13	8 29 31.64	2.2688	21 21 44.2	5.282
14	8 31 47.76	2.2686	21 16 23.6	5.402
15	8 34 3.87	2.2684	21 10 55.7	5.522
16	8 36 19.97	2.2681	21 5 20.6	5.642
17	8 38 36.05	2.2678	20 59 38.5	5.761
18	8 40 52.11	2.2674	20 53 49.2	5.880
19	8 43 8.14	2.2670	20 47 52.8	5.998
20	8 45 24.14	2.2665	20 41 49.3	6.117
21	8 47 40.11	2.2660	20 35 38.7	6.235
22	8 49 56.06	2.2655	20 29 21.0	6.353
23	8 52 11.98	2.2649	N.20 22 56.2	6.471

SATURDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 54 27.87	2.2643	N.20 16 24.4	6.588
1	8 56 43.72	2.2637	20 9 45.5	6.705
2	8 58 59.53	2.2630	20 2 59.6	6.821
3	9 1 15.30	2.2623	19 56 6.7	6.937
4	9 3 31.03	2.2615	19 49 6.8	7.053
5	9 5 46.71	2.2608	19 42 0.0	7.168
6	9 8 2.33	2.2600	19 34 46.4	7.283
7	9 10 17.90	2.2592	19 27 25.9	7.397
8	9 12 33.42	2.2583	19 19 58.6	7.510
9	9 14 48.89	2.2574	19 12 24.5	7.623
10	9 17 4.31	2.2565	19 4 43.7	7.735
11	9 19 19.67	2.2555	18 56 56.2	7.847
12	9 21 34.97	2.2545	18 49 2.0	7.958
13	9 23 50.21	2.2535	18 41 1.1	8.069
14	9 26 5.39	2.2525	18 32 53.6	8.180
15	9 28 20.51	2.2515	18 24 39.5	8.290
16	9 30 35.57	2.2504	18 16 18.8	8.399
17	9 32 50.56	2.2493	18 7 51.6	8.508
18	9 35 5.49	2.2482	17 59 17.9	8.615
19	9 37 20.35	2.2471	17 50 37.8	8.722
20	9 39 35.13	2.2459	17 41 51.3	8.828
21	9 41 49.84	2.2447	17 32 58.4	8.933
22	9 44 4.48	2.2435	17 23 59.2	9.038
23	9 46 19.04	2.2423	17 14 53.7	9.143
24	9 48 33.53	2.2410	N.17 5 42.0	9.247

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 5.					**TUESDAY 7.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 48 33.53	2.2410	N.17 5 42.0	9.247	0	11 34 41.18	2.1857	N. 7 59 53.5	13.097
1	9 50 47.95	2.2398	16 56 24.1	9.350	1	11 36 52.29	2.1850	7 46 46.1	13.150
2	9 53 2.30	2.2385	16 47 0.0	9.452	2	11 39 3.37	2.1843	7 33 35.5	13.202
3	9 55 16.57	2.2372	16 37 29.8	9.553	3	11 41 14.41	2.1837	7 20 21.8	13.252
4	9 57 30.77	2.2359	16 27 53.6	9.653	4	11 43 25.41	2.1831	7 7 5.1	13.300
5	9 59 44.89	2.2346	16 18 11.4	9.752	5	11 45 36.38	2.1826	6 53 45.5	13.348
6	10 1 58.93	2.2333	16 8 23.4	9.850	6	11 47 47.32	2.1821	6 40 23.1	13.394
7	10 4 12.89	2.2320	15 58 29.5	9.948	7	11 49 58.24	2.1817	6 26 58.0	13.440
8	10 6 26.77	2.2307	15 48 29.8	10.044	8	11 52 9.13	2.1813	6 13 30.2	13.484
9	10 8 40.57	2.2294	15 38 24.3	10.140	9	11 54 20.00	2.1810	5 59 59.8	13.528
10	10 10 54.29	2.2280	15 28 13.1	10.235	10	11 56 30.85	2.1807	5 46 26.9	13.568
11	10 13 7.93	2.2267	15 17 56.2	10.330	11	11 58 41.69	2.1804	5 32 51,5	13.608
12	10 15 21.49	2.2253	15 7 33.7	10.424	12	12 0 52.51	2.1802	5 19 13.8	13.646
13	10 17 34.97	2.2240	14 57 5.6	10.517	13	12 3 3.31	2.1800	5 5 33.9	13.683
14	10 19 48.37	2.2227	14 46 31.9	10.608	14	12 5 14.09	2.1798	4 51 51.8	13.719
15	10 22 1.70	2.2214	14 35 52.7	10.698	15	12 7 24.87	2.1797	4 38 7.6	13.754
16	10 24 14.95	2.2201	14 25 8.1	10.788	16	12 9 35.64	2.1796	4 24 21.3	13.788
17	10 26 28.12	2.2188	14 14 18.2	10.877	17	12 11 46.41	2.1796	4 10 33.1	13.820
18	10 28 41.21	2.2175	14 3 23.0	10.965	18	12 13 57.18	2.1796	3 56 43.0	13.850
19	10 30 54.22	2.2162	13 52 22.5	11.052	19	12 16 7.96	2.1796	3 42 51.1	13.880
20	10 33 7.15	2.2149	13 41 16.8	11.137	20	12 18 18.74	2.1797	3 28 57.5	13.908
21	10 35 20.01	2.2136	13 30 6.0	11.222	21	12 20 29.53	2.1799	3 15 2.3	13.934
22	10 37 32.79	2.2123	13 18 50.2	11.305	22	12 22 40.33	2.1801	3 1 5.5	13.958
23	10 39 45.49	2.2110	N.13 7 29.3	11.388	23	12 24 51.14	2.1804	N. 2 47 7.2	13.982
	MONDAY 6.					**WEDNESDAY 8.**			
0	10 41 58.12	2.2098	N.12 56 3.4	11.470	0	12 27 1.97	2.1807	N. 2 33 7.5	14.004
1	10 44 10.67	2.2085	12 44 32.6	11.552	1	12 29 12.82	2.1810	2 19 6.6	14.025
2	10 46 23.14	2.2073	12 32 57.1	11.632	2	12 31 23.69	2.1814	2 5 4.5	14.044
3	10 48 35.54	2.2061	12 21 16.9	11.710	3	12 33 34.59	2.1818	1 51 1.2	14.062
4	10 50 47.87	2.2049	12 9 32.0	11.787	4	12 35 45.52	2.1823	1 36 56.9	14.078
5	10 53 0.13	2.2037	11 57 42.5	11.863	5	12 37 56.48	2.1828	1 22 51.7	14.092
6	10 55 12.32	2.2026	11 45 48.4	11.938	6	12 40 7.47	2.1833	1 8 45.7	14.105
7	10 57 24.44	2.2014	11 33 49.8	12.013	7	12 42 18.49	2.1839	0 54 39.0	14.117
8	10 59 36.49	2.2003	11 21 46.8	12.086	8	12 44 29.55	2.1846	0 40 31.6	14.128
9	11 1 48.48	2.1992	11 9 39.5	12.158	9	12 46 40.64	2.1854	0 26 23.5	14.137
10	11 4 0.40	2.1981	10 57 27.9	12.229	10	12 48 51.78	2.1862	N. 0 12 14.9	14.145
11	11 6 12.26	2.1970	10 45 12.0	12.300	11	12 51 2.97	2.1871	S. 0 1 54.0	14.152
12	11 8 24.05	2.1960	10 32 51.9	12.369	12	12 53 14.21	2.1880	0 16 3.1	14.157
13	11 10 35.77	2.1950	10 20 27.7	12.437	13	12 55 25.51	2.1889	0 30 12.7	14.161
14	11 12 47.43	2.1940	10 7 59.5	12.503	14	12 57 36.86	2.1899	0 44 22.5	14.163
15	11 14 59.03	2.1930	9 55 27.4	12.568	15	12 59 48.27	2.1909	0 58 32.5	14.164
16	11 17 10.58	2.1921	9 42 51.5	12.631	16	13 1 59.75	2.1920	1 12 42.4	14.163
17	11 19 22.08	2.1912	9 30 11.8	12.694	17	13 4 11.30	2.1931	1 26 52.2	14.160
18	11 21 33.53	2.1903	9 17 28.3	12.755	18	13 6 22.92	2.1943	1 41 1.8	14.157
19	11 23 44.93	2.1894	9 4 41.1	12.815	19	13 8 34.62	2.1955	1 55 11.1	14.152
20	11 25 56.28	2.1886	8 51 50.4	12.874	20	13 10 46.39	2.1968	2 9 20.1	14.146
21	11 28 7.58	2.1878	8 38 56.2	12.932	21	13 12 58.24	2.1981	2 23 28.7	14.138
22	11 30 18.83	2.1871	8 25 58.6	12.988	22	13 15 10.17	2.1995	2 37 36.7	14.128
23	11 32 30.03	2.1864	8 12 57.7	13.043	23	13 17 22.19	2.2010	2 51 44.0	14.117
24	11 34 41.18	2.1857	N. 7 59 53.5	13.097	24	13 19 34.30	2.2025	S. 3 5 50.6	14.104

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 19 34.30	2.2025	S. 3 5 50.6	14.104
1	13 21 46.50	2.2041	3 19 56.4	14.090
2	13 23 58.79	2.2057	3 34 1.3	14.075
3	13 26 11.18	2.2073	3 48 5.3	14.058
4	13 28 23.67	2.2090	4 2 8.3	14.040
5	13 30 36.26	2.2107	4 16 10.1	14.020
6	13 32 48.96	2.2125	4 30 10.7	13.999
7	13 35 1.76	2.2144	4 44 10.0	13.977
8	13 37 14.68	2.2163	4 58 7.9	13.953
9	13 39 27.72	2.2182	5 12 4.3	13.928
10	13 41 40.87	2.2202	5 25 59.1	13.901
11	13 43 54.13	2.2222	5 39 52.2	13.872
12	13 46 7.51	2.2243	5 53 43.5	13.842
13	13 48 21.03	2.2264	6 7 33.0	13.810
14	13 50 34.68	2.2286	6 21 20.6	13.776
15	13 52 48.47	2.2309	6 35 6.1	13.741
16	13 55 2.40	2.2332	6 48 49.4	13.704
17	13 57 16.47	2.2356	7 2 30.5	13.666
18	13 59 30.68	2.2380	7 16 9.3	13.627
19	14 1 45.03	2.2404	7 29 45.7	13.586
20	14 3 59.52	2.2429	7 43 19.6	13.544
21	14 6 14.16	2.2454	7 56 50.9	13.500
22	14 8 28.95	2.2479	8 10 19.5	13.454
23	14 10 43.90	2.2505	S. 8 23 45.4	13.408

FRIDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 12 59.01	2.2532	S. 8 37 8.5	13.361
1	14 15 14.28	2.2559	8 50 28.7	13.312
2	14 17 29.71	2.2586	9 3 45.9	13.261
3	14 19 45.31	2.2614	9 17 0.0	13.208
4	14 22 1.08	2.2642	9 30 10.9	13.154
5	14 24 17.02	2.2671	9 43 18.5	13.098
6	14 26 33.13	2.2700	9 56 22.7	13.041
7	14 28 49.41	2.2729	10 9 23.4	12.983
8	14 31 5.87	2.2758	10 22 20.6	12.923
9	14 33 22.51	2.2788	10 35 14.1	12.862
10	14 35 39.33	2.2818	10 48 3.9	12.798
11	14 37 56.33	2.2849	11 0 49.9	12.733
12	14 40 13.51	2.2880	11 13 32.0	12.667
13	14 42 30.88	2.2911	11 26 10.1	12.600
14	14 44 48.44	2.2943	11 38 44.2	12.532
15	14 47 6.20	2.2975	11 51 14.2	12.463
16	14 49 24.15	2.3008	12 3 40.0	12.392
17	14 51 42.30	2.3040	12 16 1.4	12.319
18	14 54 0.64	2.3073	12 28 18.4	12.244
19	14 56 19.18	2.3106	12 40 30.9	12.168
20	14 58 37.92	2.3140	12 52 38.8	12.091
21	15 0 56.86	2.3174	13 4 42.0	12.013
22	15 3 16.00	2.3208	13 16 40.4	11.933
23	15 5 35.35	2.3242	13 28 34.0	11.852
24	15 7 54.90	2.3276	S. 13 40 22.6	11.769

SATURDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 7 54.90	2.3276	S. 13 40 22.6	11.769
1	15 10 14.66	2.3310	13 52 6.2	11.685
2	15 12 34.63	2.3345	14 3 44.7	11.600
3	15 14 54.81	2.3380	14 15 18.1	11.513
4	15 17 15.20	2.3415	14 26 46.3	11.425
5	15 19 35.80	2.3450	14 38 9.2	11.335
6	15 21 56.61	2.3485	14 49 26.7	11.243
7	15 24 17.63	2.3520	15 0 38.7	11.150
8	15 26 38.86	2.3555	15 11 45.1	11.056
9	15 29 0.30	2.3591	15 22 45.8	10.962
10	15 31 21.95	2.3627	15 33 40.7	10.866
11	15 33 43.81	2.3662	15 44 29.9	10.770
12	15 36 5.88	2.3698	15 55 13.3	10.672
13	15 38 28.17	2.3734	16 5 50.7	10.572
14	15 40 50.69	2.3770	16 16 22.0	10.470
15	15 43 13.42	2.3806	16 26 47.2	10.367
16	15 45 36.36	2.3841	16 37 6.1	10.262
17	15 47 59.51	2.3877	16 47 18.7	10.157
18	15 50 22.88	2.3912	16 57 24.9	10.050
19	15 52 46.45	2.3947	17 7 24.6	9.942
20	15 55 10.24	2.3982	17 17 17.8	9.833
21	15 57 34.24	2.4017	17 27 4.5	9.723
22	15 59 58.45	2.4052	17 36 44.6	9.612
23	16 2 22.87	2.4087	S. 17 46 18.0	9.500

SUNDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 4 47.50	2.4122	S. 17 55 44.6	9.386
1	16 7 12.34	2.4157	18 5 4.4	9.272
2	16 9 37.39	2.4192	18 14 17.3	9.156
3	16 12 2.64	2.4226	18 23 23.1	9.038
4	16 14 28.10	2.4260	18 32 21.8	8.919
5	16 16 53.76	2.4294	18 41 13.3	8.798
6	16 19 19.62	2.4327	18 49 57.6	8.678
7	16 21 45.68	2.4360	18 58 34.6	8.556
8	16 24 11.94	2.4392	19 7 4.3	8.433
9	16 26 38.39	2.4424	19 15 26.6	8.309
10	16 29 5.03	2.4456	19 23 41.4	8.183
11	16 31 31.86	2.4488	19 31 48.6	8.057
12	16 33 58.88	2.4520	19 39 48.2	7.930
13	16 36 26.09	2.4551	19 47 40.2	7.802
14	16 38 53.49	2.4582	19 55 24.5	7.673
15	16 41 21.07	2.4612	20 3 1.0	7.543
16	16 43 48.83	2.4641	20 10 29.7	7.412
17	16 46 16.76	2.4670	20 17 50.5	7.280
18	16 48 44.86	2.4698	20 25 3.4	7.147
19	16 51 13.13	2.4726	20 32 8.3	7.013
20	16 53 41.57	2.4753	20 39 5.1	6.879
21	16 56 10.17	2.4780	20 45 53.8	6.744
22	16 58 38.93	2.4806	20 52 34.4	6.607
23	17 1 7.86	2.4832	20 59 6.8	6.470
24	17 3 36.95	2.4858	S. 21 5 30.9	6.332

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 3 36.95	2.4858	S. 21 5 30.9	6.332
1	17 6 6.17	2.4883	21 11 46.7	6.193
2	17 8 35.54	2.4907	21 17 54.1	6.053
3	17 11 5.05	2.4930	21 23 53.1	5.913
4	17 13 34.70	2.4953	21 29 43.7	5.773
5	17 16 4.48	2.4974	21 35 25.9	5.632
6	17 18 34.39	2.4995	21 40 59.6	5.490
7	17 21 4.42	2.5015	21 46 24.7	5.347
8	17 23 34.58	2.5035	21 51 41.2	5.203
9	17 26 4.86	2.5054	21 56 49.0	5.058
10	17 28 35.25	2.5072	22 1 48.1	4.912
11	17 31 5.74	2.5089	22 6 38.4	4.765
12	17 33 36.33	2.5106	22 11 19.9	4.619
13	17 36 7.02	2.5122	22 15 52.6	4.472
14	17 38 37.80	2.5137	22 20 16.6	4.325
15	17 41 8.67	2.5151	22 24 31.8	4.178
16	17 43 39.62	2.5165	22 28 38.2	4.030
17	17 46 10.65	2.5177	22 32 35.7	3.882
18	17 48 41.76	2.5189	22 36 24.2	3.733
19	17 51 12.93	2.5199	22 40 3.8	3.584
20	17 53 44.16	2.5209	22 43 34.4	3.435
21	17 56 15.44	2.5218	22 46 56.0	3.285
22	17 58 46.77	2.5226	22 50 8.6	3.135
23	18 1 18.15	2.5233	S. 22 53 12.2	2.985

TUESDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 3 49.57	2.5239	S. 22 56 6.8	2.834
1	18 6 21.03	2.5244	22 58 52.3	2.683
2	18 8 52.52	2.5248	23 1 28.7	2.531
3	18 11 24.03	2.5251	23 3 56.0	2.379
4	18 13 55.55	2.5253	23 6 14.2	2.227
5	18 16 27.08	2.5254	23 8 23.3	2.075
6	18 18 58.62	2.5255	23 10 23.2	1.923
7	18 21 30.16	2.5254	23 12 14.0	1.771
8	18 24 1.69	2.5253	23 13 55.7	1.619
9	18 26 33.20	2.5250	23 15 28.3	1.467
10	18 29 4.69	2.5247	23 16 51.7	1.315
11	18 31 36.16	2.5242	23 18 6.0	1.163
12	18 34 7.60	2.5237	23 19 11.3	1.011
13	18 36 39.01	2.5230	23 20 7.4	0.859
14	18 39 10.38	2.5222	23 20 54.4	0.707
15	18 41 41.70	2.5214	23 21 32.3	0.554
16	18 44 12.97	2.5205	23 22 1.0	0.402
17	18 46 44.18	2.5194	23 22 20.6	0.250
18	18 49 15.31	2.5183	23 22 31.1	−0.098
19	18 51 46.37	2.5170	23 22 32.5	+0.053
20	18 54 17.35	2.5157	23 22 24.8	0.204
21	18 56 48.25	2.5142	23 22 8.0	0.355
22	18 59 19.06	2.5127	23 21 42.2	0.505
23	19 1 49.78	2.5111	23 21 7.4	0.655
24	19 4 20.40	2.5094	S. 23 20 23.6	0.805

WEDNESDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 4 20.40	2.5094	S. 23 20 23.6	0.805
1	19 6 50.92	2.5075	23 19 30.9	0.955
2	19 9 21.32	2.5056	23 18 29.2	1.104
3	19 11 51.60	2.5036	23 17 18.5	1.252
4	19 14 21.76	2.5015	23 15 58.9	1.400
5	19 16 51.79	2.4992	23 14 30.4	1.548
6	19 19 21.68	2.4969	23 12 53.1	1.695
7	19 21 51.43	2.4945	23 11 7.0	1.842
8	19 24 21.03	2.4921	23 9 12.1	1.988
9	19 26 50.48	2.4895	23 7 8.4	2.134
10	19 29 19.77	2.4869	23 4 56.0	2.279
11	19 31 48.90	2.4841	23 2 34.9	2.423
12	19 34 17.87	2.4813	23 0 5.2	2.567
13	19 36 46.67	2.4784	22 57 26.9	2.710
14	19 39 15.29	2.4754	22 54 40.0	2.853
15	19 41 43.73	2.4723	22 51 44.5	2.996
16	19 44 11.98	2.4692	22 48 40.4	3.138
17	19 46 40.03	2.4659	22 45 27.8	3.280
18	19 49 7.88	2.4626	22 42 6.8	3.420
19	19 51 35.53	2.4592	22 38 37.4	3.560
20	19 54 2.98	2.4558	22 34 59.6	3.698
21	19 56 30.22	2.4522	22 31 13.5	3.836
22	19 58 57.25	2.4486	22 27 19.2	3.972
23	20 1 24.06	2.4449	S. 22 23 16.8	4.108

THURSDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 3 50.65	2.4411	S. 22 19 6.2	4.243
1	20 6 17.01	2.4373	22 14 47.5	4.378
2	20 8 43.14	2.4334	22 10 20.8	4.512
3	20 11 9.03	2.4295	22 5 46.1	4.645
4	20 13 34.68	2.4255	22 1 3.4	4.777
5	20 16 0.09	2.4214	21 56 12.8	4.908
6	20 18 25.25	2.4173	21 51 14.4	5.038
7	20 20 50.16	2.4131	21 46 8.2	5.168
8	20 23 14.82	2.4089	21 40 54.3	5.296
9	20 25 39.22	2.4046	21 35 32.7	5.423
10	20 28 3.36	2.4002	21 30 3.5	5.548
11	20 30 27.24	2.3958	21 24 26.7	5.673
12	20 32 50.85	2.3913	21 18 42.4	5.797
13	20 35 14.19	2.3868	21 12 50.8	5.920
14	20 37 37.26	2.3823	21 6 51.9	6.043
15	20 40 0.06	2.3777	21 0 45.7	6.165
16	20 42 22.58	2.3731	20 54 32.1	6.286
17	20 44 44.82	2.3684	20 48 11.3	6.405
18	20 47 6.78	2.3637	20 41 43.4	6.523
19	20 49 28.46	2.3589	20 35 8.5	6.640
20	20 51 49.85	2.3541	20 28 26.6	6.756
21	20 54 10.95	2.3493	20 21 37.8	6.871
22	20 56 31.77	2.3445	20 14 42.1	6.984
23	20 58 52.30	2.3396	20 7 39.6	7.097
24	21 1 12.54	2.3347	S. 20 0 30.4	7.208

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 1 12.54	2.3347	S. 20 0 30.4	7.208
1	21 3 32.48	2.3298	19 53 14.6	7.318
2	21 5 52.12	2.3248	19 45 52.2	7.428
3	21 8 11.46	2.3199	19 38 23.3	7.537
4	21 10 30.50	2.3149	19 30 47.9	7.644
5	21 12 49.24	2.3099	19 23 6.2	7.750
6	21 15 7.68	2.3048	19 15 18.1	7.854
7	21 17 25.82	2.2998	19 7 23.7	7.958
8	21 19 43.66	2.2947	18 59 23.1	8.059
9	21 22 1.19	2.2897	18 51 16.5	8.160
10	21 24 18.42	2.2846	18 43 3.9	8.259
11	21 26 35.34	2.2795	18 34 45.4	8.358
12	21 28 51.96	2.2744	18 26 21.0	8.455
13	21 31 8.26	2.2693	18 17 50.7	8.552
14	21 33 24.26	2.2642	18 9 14.6	8.647
15	21 35 39.96	2.2591	18 0 32.9	8.741
16	21 37 55.36	2.2540	17 51 45.6	8.833
17	21 40 10.45	2.2489	17 42 52.8	8.925
18	21 42 25.23	2.2438	17 33 54.6	9.015
19	21 44 39.71	2.2387	17 24 51.0	9.105
20	21 46 53.88	2.2336	17 15 42.0	9.192
21	21 49 7.75	2.2285	17 6 27.8	9.279
22	21 51 21.31	2.2234	16 57 8.4	9.364
23	21 53 34.57	2.2183	S. 16 47 44.0	9.448

SATURDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 55 47.52	2.2133	S. 16 38 14.6	9.531
1	21 58 0.16	2.2082	16 28 40.2	9.613
2	22 0 12.50	2.2032	16 19 0.9	9.693
3	22 2 24.54	2.1982	16 9 16.8	9.772
4	22 4 36.28	2.1932	15 59 28.0	9.850
5	22 6 47.72	2.1882	15 49 34.6	9.927
6	22 8 58.87	2.1833	15 39 36.6	10.002
7	22 11 9.72	2.1783	15 29 34.1	10.077
8	22 13 20.27	2.1734	15 19 27.2	10.150
9	22 15 30.53	2.1685	15 9 15.9	10.223
10	22 17 40.49	2.1636	14 59 0.3	10.293
11	22 19 50.16	2.1587	14 48 40.4	10.363
12	22 21 59.54	2.1539	14 38 16.4	10.432
13	22 24 8.63	2.1491	14 27 48.4	10.499
14	22 26 17.43	2.1444	14 17 16.4	10.565
15	22 28 25.94	2.1396	14 6 40.5	10.630
16	22 30 34.16	2.1349	13 56 0.8	10.693
17	22 32 42.10	2.1302	13 45 17.3	10.756
18	22 34 49.76	2.1255	13 34 30.0	10.818
19	22 36 57.15	2.1208	13 23 39.0	10.878
20	22 39 4.26	2.1162	13 12 44.4	10.937
21	22 41 11.10	2.1116	13 1 46.3	10.995
22	22 43 17.67	2.1071	12 50 44.8	11.052
23	22 45 23.97	2.1026	12 39 39.9	11.106
24	22 47 30.00	2.0982	S. 12 28 31.8	11.160

SUNDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 47 30.00	2.0982	S. 12 28 31.8	11.160
1	22 49 35.76	2.0938	12 17 20.6	11.213
2	22 51 41.25	2.0894	12 6 6.2	11.265
3	22 53 46.48	2.0850	11 54 48.7	11.315
4	22 55 51.45	2.0807	11 43 28.2	11.365
5	22 57 56.17	2.0764	11 32 4.7	11.414
6	23 0 0.63	2.0722	11 20 38.3	11.462
7	23 2 4.84	2.0680	11 9 9.1	11.508
8	23 4 8.79	2.0639	10 57 37.2	11.553
9	23 6 12.49	2.0598	10 46 2.6	11.596
10	23 8 15.95	2.0557	10 34 25.4	11.639
11	23 10 19.17	2.0517	10 22 45.6	11.681
12	23 12 22.15	2.0477	10 11 3.4	11.723
13	23 14 24.89	2.0438	9 59 18.9	11.762
14	23 16 27.39	2.0399	9 47 32.1	11.800
15	23 18 29.66	2.0361	9 35 43.0	11.837
16	23 20 31.70	2.0323	9 23 51.7	11.873
17	23 22 33.52	2.0285	9 11 58.3	11.908
18	23 24 35.12	2.0248	9 0 2.7	11.942
19	23 26 36.50	2.0211	8 48 5.1	11.975
20	23 28 37.66	2.0175	8 36 5.6	12.007
21	23 30 38.61	2.0139	8 24 4.2	12.038
22	23 32 39.34	2.0104	8 12 1.0	12.067
23	23 34 39.86	2.0069	S. 7 59 56.0	12.095

MONDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 36 40.17	2.0035	S. 7 47 49.3	12.123
1	23 38 40.29	2.0002	7 35 41.1	12.149
2	23 40 40.20	1.9969	7 23 31.4	12.175
3	23 42 39.92	1.9936	7 11 20.2	12.199
4	23 44 39.43	1.9904	6 59 7.6	12.222
5	23 46 38.75	1.9872	6 46 53.6	12.244
6	23 48 37.88	1.9841	6 34 38.3	12.266
7	23 50 36.83	1.9810	6 22 21.7	12.286
8	23 52 35.60	1.9780	6 10 3.9	12.305
9	23 54 34.19	1.9750	5 57 44.9	12.324
10	23 56 32.60	1.9721	5 45 24.8	12.341
11	23 58 30.84	1.9693	5 33 3.7	12.358
12	0 0 28.91	1.9665	5 20 41.7	12.373
13	0 2 26.81	1.9637	5 8 18.8	12.387
14	0 4 24.55	1.9610	4 55 55.1	12.400
15	0 6 22.13	1.9583	4 43 30.6	12.412
16	0 8 19.55	1.9557	4 31 5.5	12.423
17	0 10 16.81	1.9531	4 18 39.8	12.433
18	0 12 13.92	1.9506	4 6 13.5	12.443
19	0 14 10.89	1.9482	3 53 46.6	12.452
20	0 16 7.71	1.9458	3 41 19.2	12.460
21	0 18 4.39	1.9435	3 28 51.4	12.466
22	0 20 0.93	1.9412	3 16 23.3	12.472
23	0 21 57.33	1.9390	3 3 54.9	12.476
24	0 23 53.57	1.9368	S. 2 51 26.2	12.480

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 23 53.57	1.9366	S. 2 51 26.2	12.480
1	0 25 49.70	1.9346	2 38 57.2	12.483
2	0 27 45.71	1.9325	2 26 28.1	12.485
3	0 29 41.60	1.9305	2 13 58.9	12.485
4	0 31 37.37	1.9285	2 1 29.8	12.485
5	0 33 33.02	1.9266	1 49 0.7	12.484
6	0 35 28.56	1.9248	1 36 31.6	12.483
7	0 37 23.99	1.9230	1 24 2.6	12.481
8	0 39 19.31	1.9212	1 11 33.8	12.478
9	0 41 14.53	1.9195	0 59 5.2	12.474
10	0 43 9.65	1.9178	0 46 36.9	12.469
11	0 45 4.67	1.9162	0 34 8.9	12.463
12	0 46 59.60	1.9147	0 21 41.3	12.456
13	0 48 54.43	1.9132	S. 0 9 14.1	12.448
14	0 50 49.17	1.9118	N. 0 3 12.6	12.439
15	0 52 43.82	1.9104	0 15 38.7	12.429
16	0 54 38.39	1.9090	0 28 4.2	12.418
17	0 56 32.89	1.9077	0 40 29.1	12.408
18	0 58 27.32	1.9065	0 52 53.3	12.397
19	1 0 21.68	1.9053	1 5 16.8	12.384
20	1 2 15.97	1.9042	1 17 39.5	12.370
21	1 4 10.19	1.9031	1 30 1.3	12.355
22	1 6 4.34	1.9020	1 42 22.2	12.340
23	1 7 58.43	1.9011	N. 1 54 42.2	12.324

WEDNESDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 9 52.47	1.9002	N. 2 7 1.1	12.307
1	1 11 46.45	1.8993	2 19 19.0	12.290
2	1 13 40.38	1.8985	2 31 35.8	12.272
3	1 15 34.26	1.8978	2 43 51.5	12.252
4	1 17 28.10	1.8971	2 56 6.0	12.232
5	1 19 21.90	1.8964	3 8 19.3	12.211
6	1 21 15.66	1.8958	3 20 31.4	12.189
7	1 23 9.39	1.8952	3 32 42.1	12.166
8	1 25 3.09	1.8947	3 44 51.5	12.143
9	1 26 56.76	1.8942	3 56 59.5	12.119
10	1 28 50.40	1.8938	4 9 6.0	12.095
11	1 30 44.02	1.8935	4 21 11.0	12.069
12	1 32 37.62	1.8932	4 33 14.5	12.043
13	1 34 31.19	1.8930	4 45 16.4	12.016
14	1 36 24.75	1.8928	4 57 16.7	11.989
15	1 38 18.30	1.8926	5 9 15.3	11.960
16	1 40 11.84	1.8925	5 21 12.1	11.930
17	1 42 5.38	1.8925	5 33 7.1	11.900
18	1 43 58.93	1.8925	5 45 0.3	11.870
19	1 45 52.47	1.8925	5 56 51.6	11.837
20	1 47 46.02	1.8925	6 8 41.0	11.803
21	1 49 39.58	1.8926	6 20 28.4	11.769
22	1 51 33.15	1.8928	6 32 13.8	11.735
23	1 53 26.73	1.8930	6 43 57.1	11.702
24	1 55 20.32	1.8933	N. 6 55 38.3	11.668

THURSDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 55 20.32	1.8933	N. 6 55 38.3	11.668
1	1 57 13.92	1.8936	7 7 17.4	11.633
2	1 59 7.54	1.8940	7 18 54.4	11.598
3	2 1 1.18	1.8944	7 30 29.2	11.561
4	2 2 54.85	1.8949	7 42 1.8	11.523
5	2 4 48.55	1.8954	7 53 32.1	11.485
6	2 6 42.29	1.8960	8 5 0.1	11.446
7	2 8 36.07	1.8966	8 16 25.7	11.406
8	2 10 29.89	1.8973	8 27 48.9	11.365
9	2 12 23.75	1.8980	8 39 9.6	11.324
10	2 14 17.65	1.8986	8 50 27.8	11.282
11	2 16 11.59	1.8994	9 1 43.4	11.239
12	2 18 5.58	1.9002	9 12 56.4	11.195
13	2 19 59.62	1.9011	9 24 6.8	11.151
14	2 21 53.71	1.9020	9 35 14.5	11.107
15	2 23 47.86	1.9030	9 46 19.5	11.061
16	2 25 42.06	1.9040	9 57 21.8	11.015
17	2 27 36.32	1.9050	10 8 21.3	10.968
18	2 29 30.65	1.9061	10 19 18.0	10.921
19	2 31 25.05	1.9072	10 30 11.8	10.872
20	2 33 19.52	1.9084	10 41 2.7	10.823
21	2 35 14.06	1.9096	10 51 50.7	10.773
22	2 37 8.67	1.9109	11 2 35.7	10.723
23	2 39 3.36	1.9122	N.11 13 17.7	10.673

FRIDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 40 58.13	1.9135	N.11 23 56.6	10.622
1	2 42 52.97	1.9149	11 34 32.4	10.570
2	2 44 47.89	1.9163	11 45 5.1	10.517
3	2 46 42.91	1.9177	11 55 34.6	10.463
4	2 48 38.02	1.9192	12 6 0.8	10.408
5	2 50 33.22	1.9207	12 16 23.7	10.354
6	2 52 28.51	1.9223	12 26 43.3	10.299
7	2 54 23.90	1.9239	12 36 59.6	10.243
8	2 56 19.38	1.9255	12 47 12.5	10.187
9	2 58 14.96	1.9272	12 57 22.0	10.130
10	3 0 10.64	1.9289	13 7 28.1	10.072
11	3 2 6.42	1.9306	13 17 30.7	10.013
12	3 4 2.31	1.9324	13 27 29.7	9.953
13	3 5 58.31	1.9342	13 37 25.1	9.893
14	3 7 54.42	1.9361	13 47 17.0	9.833
15	3 9 50.64	1.9380	13 57 5.3	9.772
16	3 11 46.97	1.9399	14 6 49.9	9.710
17	3 13 43.42	1.9418	14 16 30.7	9.648
18	3 15 39.99	1.9438	14 26 7.7	9.585
19	3 17 36.68	1.9458	14 35 40.9	9.522
20	3 19 33.49	1.9478	14 45 10.3	9.458
21	3 21 30.42	1.9499	14 54 35.9	9.393
22	3 23 27.47	1.9520	15 3 57.6	9.328
23	3 25 24.65	1.9541	15 13 15.3	9.262
24	3 27 21.97	1.9563	N.15 22 29.0	9.195

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 25.					MONDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	3 27 21.97	1.9563	N.15 22 29.0	9.195	0	5 4 10.20	2.0822	N.21 15 35.5	5.293
1	3 29 19.41	1.9585	15 31 38.8	9.128	1	5 6 15.22	2.0850	21 20 50.2	5.198
2	3 31 16.98	1.9608	15 40 44.5	9.060	2	5 8 20.41	2.0878	21 25 59.2	5.102
3	3 33 14.70	1.9630	15 49 46.1	8.991	3	5 10 25.76	2.0906	21 31 2.4	5.005
4	3 35 12.55	1.9653	15 58 43.5	8.922	4	5 12 31.28	2.0934	21 35 59.8	4.908
5	3 37 10.54	1.9676	16 7 36.7	8.852	5	5 14 36.96	2.0962	21 40 51.4	4.811
6	3 39 8.66	1.9699	16 16 25.7	8.782	6	5 16 42.81	2.0989	21 45 37.2	4.713
7	3 41 6.92	1.9722	16 25 10.5	8.711	7	5 18 48.82	2.1017	21 50 17.1	4.615
8	3 43 5.32	1.9746	16 33 51.0	8.639	8	5 20 55.00	2.1044	21 54 51.1	4.516
9	3 45 3.87	1.9770	16 42 27.2	8.567	9	5 23 1.34	2.1071	21 59 19.2	4.417
10	3 47 2.56	1.9795	16 50 59.1	8.494	10	5 25 7.84	2.1098	22 3 41.3	4.317
11	3 49 1.40	1.9819	16 59 26.6	8.421	11	5 27 14.51	2.1125	22 7 57.4	4.216
12	3 51 0.39	1.9844	17 7 49.7	8.347	12	5 29 21.34	2.1152	22 12 7.4	4.115
13	3 52 59.53	1.9869	17 16 8.3	8.272	13	5 31 28.32	2.1179	22 16 11.3	4.014
14	3 54 58.82	1.9894	17 24 22.4	8.197	14	5 33 35.47	2.1205	22 20 9.1	3.912
15	3 56 58.26	1.9919	17 32 32.0	8.121	15	5 35 42.78	2.1231	22 24 0.8	3.810
16	3 58 57.85	1.9945	17 40 37.0	8.045	16	5 37 50.25	2.1257	22 27 46.4	3.707
17	4 0 57.60	1.9970	17 48 37.4	7.968	17	5 39 57.87	2.1283	22 31 25.8	3.604
18	4 2 57.50	1.9996	17 56 33.2	7.890	18	5 42 5.65	2.1309	22 34 59.0	3.500
19	4 4 57.56	2.0022	18 4 24.3	7.812	19	5 44 13.58	2.1335	22 38 25.9	3.396
20	4 6 57.77	2.0048	18 12 10.7	7.733	20	5 46 21.67	2.1360	22 41 46.5	3.291
21	4 8 58.14	2.0074	18 19 52.3	7.654	21	5 48 29.91	2.1385	22 45 0.8	3.186
22	4 10 58.66	2.0101	18 27 29.1	7.574	22	5 50 38.30	2.1410	22 48 8.8	3.080
23	4 12 59.34	2.0128	N.18 35 1.2	7.493	23	5 52 46.84	2.1435	N.22 51 10.5	2.974
	SUNDAY 26.					TUESDAY 28.			
0	4 15 0.18	2.0155	N.18 42 28.4	7.412	0	5 54 55.53	2.1460	N.22 54 5.8	2.868
1	4 17 1.19	2.0182	18 49 50.7	7.330	1	5 57 4.37	2.1484	22 56 54.7	2.761
2	4 19 2.36	2.0209	18 57 8.1	7.248	2	5 59 13.36	2.1508	22 59 37.2	2.654
3	4 21 3.69	2.0236	19 4 20.5	7.165	3	6 1 22.49	2.1532	23 2 13.2	2.546
4	4 23 5.18	2.0263	19 11 27.9	7.082	4	6 3 31.76	2.1556	23 4 42.7	2.438
5	4 25 6.84	2.0290	19 18 30.3	6.998	5	6 5 41.16	2.1579	23 7 5.7	2.329
6	4 27 8.67	2.0318	19 25 27.6	6.913	6	6 7 50.70	2.1602	23 9 22.2	2.220
7	4 29 10.66	2.0345	19 32 19.8	6.828	7	6 10 0.38	2.1625	23 11 32.2	2.110
8	4 31 12.82	2.0373	19 39 6.9	6.742	8	6 12 10.20	2.1648	23 13 35.6	2.000
9	4 33 15.15	2.0401	19 45 48.8	6.656	9	6 14 20.15	2.1670	23 15 32.4	1.890
10	4 35 17.65	2.0429	19 52 25.6	6.569	10	6 16 30.23	2.1692	23 17 22.5	1.779
11	4 37 20.31	2.0457	19 58 57.2	6.481	11	6 18 40.44	2.1714	23 19 6.0	1.668
12	4 39 23.14	2.0485	20 5 23.5	6.393	12	6 20 50.78	2.1735	23 20 42.8	1.557
13	4 41 26.14	2.0513	20 11 44.5	6.304	13	6 23 1.25	2.1756	23 22 12.9	1.445
14	4 43 29.30	2.0541	20 18 0.1	6.215	14	6 25 11.85	2.1776	23 23 36.3	1.333
15	4 45 32.63	2.0569	20 24 10.3	6.125	15	6 27 22.57	2.1796	23 24 53.0	1.221
16	4 47 36.13	2.0598	20 30 15.1	6.035	16	6 29 33.41	2.1816	23 26 2.9	1.108
17	4 49 39.80	2.0626	20 36 14.5	5.944	17	6 31 44.37	2.1836	23 27 6.0	0.995
18	4 51 43.64	2.0654	20 42 8.6	5.853	18	6 33 55.45	2.1855	23 28 2.3	0.882
19	4 53 47.65	2.0682	20 47 57.0	5.761	19	6 36 6.64	2.1874	23 28 51.8	0.768
20	4 55 51.82	2.0710	20 53 39.9	5.668	20	6 38 17.94	2.1893	23 29 34.5	0.653
21	4 57 56.16	2.0738	20 59 17.3	5.575	21	6 40 29.35	2.1911	23 30 10.3	0.539
22	5 0 0.67	2.0766	21 4 49.1	5.481	22	6 42 40.87	2.1929	23 30 39.3	0.424
23	5 2 5.35	2.0794	21 10 15.1	5.387	23	6 44 52.49	2.1946	23 31 1.4	0.310
24	5 4 10.20	2.0822	N.21 15 35.5	5.293	24	6 47 4.22	2.1963	N.23 31 16.6	0.195

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 47 4.22	2.1963	N.23 31 16.6	0.195
1	6 49 16.06	2.1980	23 31 24.8	+0.080
2	6 51 28.00	2.1996	23 31 26.1	−0.036
3	6 53 40.04	2.2012	23 31 20.4	0.152
4	6 55 52.16	2.2028	23 31 7.8	0.268
5	6 58 4.37	2.2043	23 30 48.2	0.385
6	7 0 16.67	2.2058	23 30 21.6	0.502
7	7 2 29.06	2.2073	23 29 48.0	0.619
8	7 4 41.54	2.2087	23 29 7.4	0.737
9	7 6 54.10	2.2101	23 28 19.7	0.854
10	7 9 6.74	2.2114	23 27 24.9	0.972
11	7 11 19.46	2.2127	23 26 23.0	1.089
12	7 13 32.26	2.2139	23 25 14.1	1.207
13	7 15 45.13	2.2151	23 23 58.1	1.325
14	7 17 58.07	2.2163	23 22 35.0	1.443
15	7 20 11.08	2.2174	23 21 4.8	1.561
16	7 22 24.16	2.2185	23 19 27.5	1.680
17	7 24 37.30	2.2195	23 17 43.1	1.799
18	7 26 50.50	2.2205	23 15 51.6	1.918
19	7 29 3.76	2.2215	23 13 53.0	2.037
20	7 31 17.08	2.2224	23 11 47.2	2.157
21	7 33 30.45	2.2233	23 9 34.2	2.276
22	7 35 43.87	2.2241	23 7 14.0	2.396
23	7 37 57.34	2.2249	N.23 4 46.6	2.515

THURSDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 40 10.86	2.2257	N.23 2 12.1	2.635
1	7 42 24.43	2.2264	22 59 30.4	2.754
2	7 44 38.04	2.2271	22 56 41.6	2.873
3	7 46 51.69	2.2277	22 53 45.6	2.992
4	7 49 5.38	2.2283	22 50 42.5	3.112
5	7 51 19.10	2.2288	22 47 32.2	3.232
6	7 53 32.84	2.2293	22 44 14.7	3.352
7	7 55 46.61	2.2298	22 40 50.0	3.472
8	7 58 0.41	2.2302	22 37 18.1	3.592
9	8 0 14.23	2.2306	22 33 39.0	3.711
10	8 2 28.08	2.2310	22 29 52.8	3.830
11	8 4 41.95	2.2314	22 25 59.5	3.949
12	8 6 55.84	2.2317	22 21 59.0	4.068
13	8 9 9.75	2.2320	22 17 51.3	4.188
14	8 11 23.68	2.2322	22 13 36.5	4.307
15	8 13 37.62	2.2324	22 9 14.6	4.426
16	8 15 51.56	2.2325	22 4 45.6	4.545
17	8 18 5.51	2.2326	22 0 9.4	4.664
18	8 20 19.46	2.2326	21 55 26.0	4.783
19	8 22 33.42	2.2327	21 50 35.5	4.902
20	8 24 47.38	2.2327	21 45 37.8	5.020
21	8 27 1.34	2.2327	21 40 33.0	5.138
22	8 29 15.30	2.2326	21 35 21.1	5.256
23	8 31 29.25	2.2325	21 30 2.1	5.373
24	8 33 43.19	2.2324	N.21 24 36.1	5.490

FRIDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 33 43.19	2.2324	N.21 24 36.1	5.490
1	8 35 57.12	2.2322	21 19 3.1	5.608
2	8 38 11.04	2.2320	21 13 23.0	5.726
3	8 40 24.95	2.2318	21 7 35.9	5.843
4	8 42 38.85	2.2315	21 1 41.8	5.960
5	8 44 52.73	2.2313	20 55 40.7	6.077
6	8 47 6.59	2.2310	20 49 32.6	6.193
7	8 49 20.44	2.2307	20 43 17.5	6.309
8	8 51 34.27	2.2303	20 36 55.5	6.425
9	8 53 48.08	2.2299	20 30 26.6	6.540
10	8 56 1.87	2.2295	20 23 50.8	6.655
11	8 58 15.63	2.2291	20 17 8.1	6.769
12	9 0 29.36	2.2286	20 10 18.5	6.884
13	9 2 43.06	2.2281	20 3 22.0	6.998
14	9 4 56.73	2.2276	19 56 18.7	7.112
15	9 7 10.37	2.2271	19 49 8.6	7.225
16	9 9 23.98	2.2266	19 41 51.7	7.338
17	9 11 37.56	2.2261	19 34 28.0	7.450
18	9 13 51.11	2.2255	19 26 57.6	7.562
19	9 16 4.63	2.2249	19 19 20.5	7.674
20	9 18 18.11	2.2243	19 11 36.8	7.785
21	9 20 31.55	2.2237	19 3 46.5	7.895
22	9 22 44.95	2.2230	18 55 49.5	8.005
23	9 24 58.31	2.2224	N.18 47 45.9	8.115

SATURDAY, APRIL 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 27 11.63	2.2217	N.18 39 35.7	8.224

PHASES OF THE MOON.

	d	h	m
○ Full Moon, . . .	6	15	39.2
☾ Last Quarter, . .	13	10	19.8
● New Moon, . .	20	16	0.5
☽ First Quarter, . .	28	18	44.3

	d	h
☾ Perigee, ...	10	9.6
☾ Apogee, ...	26	4.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	SUN	W.	112° 25′ 42″	3358	113° 48′ 46″	3348	115° 12′ 2″	3337	116° 35′ 31″	3325
	Venus	W.	92 36 15	3446	93 57 40	3435	95 19 17	3423	96 41 7	3411
	α Arietis	W.	57 43 17	3161	59 10 13	3144	60 37 29	3129	62 5 3	3113
	Aldebaran	W.	25 24 0	2995	26 54 19	2982	28 24 54	2969	29 55 45	2957
	Regulus	E.	55 7 23	2978	53 36 43	2968	52 5 50	2958	50 34 45	2949
	Mars	E.	92 35 18	2876	91 2 28	2865	89 29 24	2854	87 56 6	2844
2	SUN	W.	123 36 19	3266	125 1 12	3252	126 26 20	3239	127 51 43	3225
	Venus	W.	103 33 49	3346	104 57 7	3332	106 20 41	3319	107 44 31	3304
	α Arietis	W.	69 27 44	3034	70 57 15	3019	72 27 4	3004	73 57 12	2967
	Aldebaran	W.	37 34 5	2891	39 6 35	2876	40 39 24	2864	42 12 29	2849
	Jupiter	W.	28 2 54	2906	29 35 5	2893	31 7 33	2880	32 40 18	2866
	Regulus	E.	42 56 1	2893	41 23 33	2883	39 50 52	2870	38 17 55	2859
	Mars	E.	80 5 58	2783	78 31 8	2770	76 56 1	2758	75 20 38	2744
3	α Arietis	W.	81 32 49	2909	83 4 56	2894	84 37 22	2880	86 10 7	2864
	Aldebaran	W.	50 2 33	2778	51 37 30	2762	53 12 48	2748	54 48 24	2733
	Jupiter	W.	40 28 31	2796	42 3 4	2780	43 37 58	2766	45 13 10	2752
	Mars	E.	67 19 9	2675	65 41 55	2660	64 4 21	2645	62 26 27	2631
	Spica	E.	84 32 30	2801	82 58 3	2786	81 23 17	2772	79 48 13	2758
4	Aldebaran	W.	62 51 25	2657	64 29 2	2642	66 7 0	2627	67 45 18	2612
	Jupiter	W.	53 14 6	2677	54 51 17	2661	56 28 49	2647	58 6 40	2632
	Pollux	W.	19 16 53	2825	20 50 49	2785	22 25 36	2750	24 1 9	2721
	Mars	E.	54 11 56	2556	52 32 0	2541	50 51 44	2527	49 11 8	2511
	Spica	E.	71 48 8	2687	70 11 10	2672	68 33 52	2658	66 56 16	2644
5	Aldebaran	W.	76 1 52	2538	77 42 12	2525	79 22 51	2510	81 3 50	2497
	Jupiter	W.	66 21 0	2559	68 0 52	2545	69 41 3	2530	71 21 35	2517
	Pollux	W.	32 7 57	2600	33 46 52	2580	35 26 15	2561	37 6 3	2543
	Mars	E.	40 42 54	2438	39 0 14	2424	37 17 14	2411	35 33 55	2397
	Spica	E.	58 43 35	2577	57 4 9	2564	55 24 25	2552	53 44 24	2541
	Antares	E.	104 37 12	2567	102 57 32	2553	101 17 32	2539	99 37 13	2524
6	Aldebaran	W.	89 33 31	2431	91 16 22	2418	92 59 31	2406	94 42 57	2394
	Jupiter	W.	79 48 54	2450	81 31 17	2438	83 13 57	2426	84 56 54	2415
	Pollux	W.	45 31 4	2462	47 13 11	2448	48 55 38	2434	50 38 24	2421
	Spica	E.	45 20 32	2490	43 39 5	2482	41 57 26	2474	40 15 36	2468
	Antares	E.	91 10 43	2458	89 28 30	2445	87 45 59	2433	86 3 11	2422
	Saturn	E.	121 4 31	2446	119 22 2	2433	117 39 15	2423	115 56 13	2410
7	Aldebaran	W.	103 24 11	2341	105 9 11	2331	106 54 26	2321	108 39 55	2311
	Jupiter	W.	93 35 41	2362	95 20 11	2352	97 4 55	2342	98 49 53	2334
	Pollux	W.	59 16 49	2361	61 1 20	2350	62 46 6	2341	64 31 6	2331
	Regulus	W.	23 21 47	2382	25 5 48	2366	26 50 11	2353	28 34 54	2340
	Antares	E.	77 25 16	2368	75 40 56	2361	73 56 25	2352	72 11 41	2344
	Saturn	E.	107 16 50	2356	105 32 12	2346	103 47 20	2337	102 2 15	2328
8	Jupiter	W.	107 37 37	2297	109 23 41	2291	111 9 54	2285	112 56 16	2280
	Pollux	W.	73 19 22	2291	75 5 35	2284	76 51 58	2278	78 38 30	2272
	Regulus	W.	37 22 38	2290	39 8 52	2282	40 55 18	2276	42 41 53	2269
	Antares	E.	63 25 20	2311	61 39 37	2306	59 53 46	2302	58 7 49	2298
	Saturn	E.	93 13 45	2289	91 27 30	2284	89 41 7	2277	87 54 34	2272
	α Aquilæ	E.	108 43 2	3030	107 13 27	3009	105 43 26	2991	104 13 2	2974

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	117° 59′ 13″	3313	119° 23′ 9″	3302	120° 47′ 18″	3290	122° 11′ 41″	3277
	Venus	W.	98 3 11	3399	99 25 29	3386	100 48 1	3374	102 10 47	3360
	α Arietis	W.	63 32 57	3097	65 1 10	3082	66 29 42	3066	67 58 33	3050
	Aldebaran	W.	31 26 52	2943	32 58 16	2931	34 29 55	2918	36 1 51	2904
	Regulus	E.	49 3 28	2938	47 31 57	2927	46 0 12	2916	44 28 13	2905
	Mars	E.	86 22 35	2831	84 48 48	2821	83 14 47	2809	81 40 31	2796
2	Sun	W.	129 17 23	3211	130 43 19	3198	132 9 31	3183	133 36 0	3169
	Venus	W.	109 8 38	3289	110 33 2	3274	111 57 44	3259	113 22 43	3244
	α Arietis	W.	75 27 41	2972	76 58 29	2957	78 29 36	2942	80 1 2	2925
	Aldebaran	W.	43 45 53	2835	45 19 35	2821	46 53 36	2808	48 27 54	2792
	Jupiter	W.	34 13 20	2852	35 46 41	2838	37 20 20	2825	38 54 16	2810
	Regulus	E.	36 44 43	2847	35 11 16	2835	33 37 34	2822	32 3 35	2811
	Mars	E.	73 44 57	2730	72 8 57	2717	70 32 40	2703	68 56 4	2689
3	α Arietis	W.	87 43 12	2848	89 16 37	2835	90 50 20	2819	92 24 23	2804
	Aldebaran	W.	56 24 20	2718	58 0 36	2703	59 37 12	2687	61 14 9	2673
	Jupiter	W.	46 48 41	2737	48 24 32	2721	50 0 44	2707	51 37 15	2692
	Mars	E.	60 48 14	2615	59 9 39	2601	57 30 46	2585	55 51 31	2571
	Spica	E.	78 12 50	2744	76 37 8	2729	75 1 7	2715	73 24 47	2701
4	Aldebaran	W.	69 23 56	2597	71 2 55	2583	72 42 14	2567	74 21 54	2554
	Jupiter	W.	59 44 52	2617	61 23 24	2602	63 2 16	2567	64 41 29	2574
	Pollux	W.	25 37 21	2692	27 14 11	2667	28 51 35	2643	30 29 32	2622
	Mars	E.	47 30 10	2496	45 48 51	2482	44 7 12	2468	42 25 14	2453
	Spica	E.	65 18 21	2629	63 40 6	2617	62 1 34	2604	60 22 44	2590
5	Aldebaran	W.	82 45 8	2482	84 26 46	2469	86 8 43	2456	87 50 58	2443
	Jupiter	W.	73 2 25	2502	74 43 35	2490	76 25 2	2476	78 6 49	2463
	Pollux	W.	38 46 17	2525	40 26 55	2509	42 7 56	2493	43 49 19	2477
	Mars	E.	33 50 16	2384	32 6 18	2371	30 22 2	2357	28 37 26	2345
	Spica	E.	52 4 8	2529	50 23 35	2519	48 42 48	2509	47 1 47	2499
	Antares	E.	97 56 33	2510	96 15 34	2496	94 34 15	2483	92 52 38	2470
6	Aldebaran	W.	96 26 40	2382	98 10 40	2372	99 54 55	2362	101 39 24	2350
	Jupiter	W.	86 40 8	2403	88 23 38	2392	90 7 24	2382	91 51 25	2371
	Pollux	W.	52 21 29	2408	54 4 53	2395	55 48 35	2383	57 32 34	2372
	Spica	E.	38 33 38	2463	36 51 33	2459	35 9 22	2457	33 27 8	2456
	Antares	E.	84 20 7	2410	82 36 47	2399	80 53 11	2389	79 9 20	2380
	Saturn	E.	114 12 52	2398	112 29 15	2387	110 45 22	2377	109 1 14	2366
7	Aldebaran	W.	110 25 38	2302	112 11 34	2294	114 7 43	2285	115 54 4	2277
	Jupiter	W.	100 35 3	2326	102 20 25	2318	104 5 58	2311	105 51 42	2303
	Pollux	W.	66 16 20	2322	68 1 47	2313	69 47 27	2305	71 33 19	2298
	Regulus	W.	30 19 56	2328	32 5 14	2317	33 50 48	2308	35 36 36	2298
	Antares	E.	70 26 45	2336	68 41 38	2329	66 56 21	2324	65 10 56	2316
	Saturn	E.	100 16 56	2320	98 31 25	2312	96 45 43	2304	94 59 49	2297
8	Jupiter	W.	114 42 45	2274	116 29 22	2270	118 16 5	2266	120 2 54	2262
	Pollux	W.	80 25 10	2267	82 11 58	2262	83 58 53	2258	85 45 54	2255
	Regulus	W.	44 28 38	2263	46 15 32	2257	48 2 35	2253	49 49 44	2241
	Antares	E.	56 21 47	2296	54 35 41	2292	52 49 30	2291	51 3 18	2290
	Saturn	E.	86 7 54	2267	84 21 6	2264	82 34 13	2258	80 47 12	2256
	α Aquilæ	E.	102 42 17	2959	101 11 13	2946	99 39 52	2935	99 8 17	2924

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	III$^{\text{h}}$.	P. L. of Diff.	VI$^{\text{h}}$.	P. L. of Diff.	IX$^{\text{h}}$.	P. L. of Diff.
9	Pollux	W.	87° 33′ 0″	2251	89° 20′ 12″	2248	91° 7′ 28″	2246	92° 54′ 47″	2244
	Regulus	W.	51 37 0	2244	53 24 22	2241	55 11 49	2238	56 59 20	2235
	Antares	E.	49 17 4	2289	47 30 49	2290	45 44 35	2293	43 58 25	2294
	Saturn	E.	79 0 7	2251	77 12 55	2249	75 25 40	2246	73 38 21	2244
	α Aquilæ	E.	96 36 29	2916	95 4 31	2909	93 32 24	2905	92 0 12	2901
10	Regulus	W.	65 57 39	2229	67 45 23	2230	69 33 6	2229	71 20 50	2231
	Mars	W.	31 9 14	2190	32 59 42	2190	34 50 10	2190	36 40 38	2190
	Antares	E.	35 8 52	2324	33 23 27	2334	31 38 17	2347	29 53 26	2362
	Saturn	E.	64 41 11	2239	62 53 42	2239	61 6 13	2241	59 18 46	2241
	α Aquilæ	E.	84 18 41	2907	82 46 31	2913	81 14 29	2920	79 42 36	2930
	Sun	E.	135 21 21	2562	133 41 34	2561	132 1 46	2560	130 21 56	2560
11	Regulus	W.	80 18 59	2239	82 6 29	2241	83 53 55	2245	85 41 15	2247
	Mars	W.	45 52 41	2128	47 42 58	2129	49 33 13	2132	51 23 23	2135
	Spica	W.	26 56 36	2381	28 40 38	2366	30 25 1	2357	32 9 38	2348
	Saturn	E.	50 21 56	2250	48 34 43	2253	46 47 34	2256	45 0 30	2259
	α Aquilæ	E.	72 6 46	3001	70 36 34	3022	69 6 48	3043	67 17 28	3067
	Sun	E.	122 2 55	2566	120 23 13	2567	118 43 33	2571	117 3 58	2573
12	Mars	W.	60 33 4	2152	62 22 44	2156	64 12 18	2161	66 1 45	2165
	Spica	W.	40 54 53	2331	42 40 7	2331	44 25 21	2331	46 10 35	2333
	Saturn	E.	36 6 27	2279	34 19 56	2284	32 33 33	2288	30 47 16	2294
	α Aquilæ	E.	60 19 18	3230	58 53 44	3271	57 28 59	3318	56 5 7	3367
	Sun	E.	108 47 6	2592	107 8 0	2596	105 29 0	2601	103 50 6	2607
13	Mars	W.	75 7 17	2189	76 56 1	2194	78 44 38	2200	80 33 6	2205
	Spica	W.	54 56 3	2346	56 40 56	2349	58 25 44	2353	60 10 26	2357
	Antares	W.	10 52 59	3292	12 17 20	3052	13 46 29	2890	15 19 1	2779
	α Aquilæ	E.	49 21 51	3698	48 5 2	3785	46 49 44	3879	45 36 3	3985
	Sun	E.	95 37 25	2634	93 59 16	2640	92 21 15	2646	90 43 22	2652
14	Mars	W.	89 33 24	2233	91 21 2	2239	93 8 31	2245	94 55 52	2251
	Spica	W.	68 52 16	2382	70 36 16	2387	72 20 9	2394	74 3 53	2399
	Antares	W.	23 27 9	2544	25 7 21	2526	26 47 58	2514	28 28 52	2502
	Sun	E.	82 36 5	2685	80 59 5	2691	79 22 13	2699	77 45 32	2705
15	Mars	W.	103 50 19	2282	105 36 45	2288	107 23 2	2295	109 9 9	2302
	Spica	W.	82 40 27	2430	84 23 19	2436	86 6 2	2443	87 48 36	2450
	Antares	W.	36 55 53	2485	38 37 28	2485	40 19 3	2487	42 0 35	2487
	Sun	E.	69 44 27	2742	68 8 43	2750	66 33 9	2758	64 57 46	2766
16	Antares	W.	50 27 22	2505	52 8 28	2510	53 49 27	2515	55 30 19	2520
	Saturn	W.	19 38 16	2475	21 20 4	2481	23 1 44	2487	24 43 15	2494
	Sun	E.	57 3 26	2806	55 29 6	2815	53 54 57	2824	52 21 0	2832
17	Antares	W.	63 52 44	2550	65 32 48	2556	67 12 43	2563	68 52 29	2570
	Saturn	W.	33 8 26	2529	34 48 59	2537	36 29 21	2545	38 9 32	2553
	Sun	E.	44 34 9	2879	43 1 23	2891	41 28 52	2901	39 56 34	2912
18	Antares	W.	77 8 51	2607	78 47 37	2615	80 26 12	2623	82 4 36	2631
	Saturn	W.	46 27 51	2591	48 6 58	2599	49 45 55	2607	51 24 40	2616
	Sun	E.	32 18 42	2973	30 47 56	2987	29 17 27	3004	27 47 19	3020
23	Sun	W.	27 11 43	3387	28 34 14	3390	29 56 42	3393	31 19 6	3397

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
9	Pollux	W.	94° 42′ 9″	2942	96° 29′ 34″	2941	98° 17′ 1″	2940	100° 4′ 29″	2940
	Regulus	W.	58 46 55	2233	60 34 33	2231	62 22 14	2231	64 9 56	2230
	Antares	E.	42 12 17	2298	40 26 14	2302	38 40 18	2307	36 54 29	2315
	Saturn	E.	71 50 59	2242	70 3 34	2241	68 16 7	2241	66 28 40	2239
	α Aquilæ	E.	90 27 55	2899	88 55 35	2899	87 23 15	2900	85 50 56	2903
10	Regulus	W.	73 8 31	2231	74 56 12	2233	76 43 50	2234	78 31 27	2237
	Mars	W.	38 31 6	2121	40 21 33	2122	42 11 59	2125	44 2 20	2125
	Antares	E.	28 8 57	2381	26 24 55	2403	24 41 25	2432	22 58 36	2467
	Saturn	E.	57 31 19	2243	55 43 55	2243	53 56 32	2245	52 9 12	2248
	α Aquilæ	E.	78 10 55	2940	76 39 27	2952	75 8 14	2966	73 37 19	2984
	Sun	E.	128 42 6	2560	127 2 16	2561	125 22 28	2562	123 42 41	2563
11	Regulus	W.	87 28 33	2251	89 15 45	2255	91 2 51	2259	92 49 51	2263
	Mars	W.	53 13 29	2137	55 3 31	2141	56 53 27	2144	58 43 19	2149
	Spica	W.	33 54 27	2342	35 39 26	2337	37 24 31	2336	39 9 40	2332
	Saturn	E.	43 13 30	2262	41 26 35	2267	39 39 47	2270	37 53 3	2275
	α Aquilæ	E.	66 8 38	3096	64 40 22	3123	63 12 40	3156	61 45 38	3191
	Sun	E.	115 24 26	2576	113 44 58	2580	112 5 36	2583	110 26 18	2588
12	Mars	W.	67 51 6	2170	69 40 19	2174	71 29 26	2179	73 18 25	2184
	Spica	W.	47 55 47	2335	49 40 56	2336	51 26 3	2339	53 11 5	2342
	Saturn	E.	29 1 7	2298	27 15 5	2304	25 29 12	2310	23 43 27	2315
	α Aquilæ	E.	54 42 13	3423	53 20 22	3481	51 59 37	3547	50 40 5	3619
	Sun	E.	102 11 20	2611	100 32 40	2616	98 54 7	2622	97 15 42	2628
13	Mars	W.	82 21 26	2210	84 9 38	2216	85 57 42	2222	87 45 37	2227
	Spica	W.	61 55 2	2362	63 39 31	2366	65 23 54	2372	67 8 9	2378
	Antares	W.	16 53 57	2699	18 30 38	2642	20 8 36	2600	21 47 31	2569
	α Aquilæ	E.	44 24 9	4103	43 14 10	4232	42 6 14	4377	41 0 32	4538
	Sun	E.	89 5 37	2658	87 28 1	2664	85 50 33	2671	84 13 14	2678
14	Mars	W.	96 43 3	2257	98 30 6	2264	100 16 59	2269	102 3 44	2276
	Spica	W.	75 47 29	2405	77 30 56	2411	79 14 15	2417	80 57 25	2423
	Antares	W.	30 10 2	2496	31 51 21	2490	33 32 48	2487	35 14 19	2485
	Sun	E.	76 8 59	2713	74 32 36	2720	72 56 23	2728	71 20 20	2735
15	Mars	W.	110 55 6	2308	112 40 54	2314	114 26 33	2320	116 12 3	2328
	Spica	W.	89 31 0	2456	91 13 15	2463	92 55 20	2470	94 37 15	2477
	Antares	W.	43 42 6	2491	45 23 32	2494	47 4 53	2497	48 46 11	2502
	Sun	E.	63 22 33	2773	61 47 30	2781	60 12 37	2791	58 37 57	2798
16	Antares	W.	57 11 4	2526	58 51 41	2531	60 32 11	2538	62 12 31	2543
	Saturn	W.	26 24 37	2501	28 5 49	2508	29 46 51	2515	31 27 44	2522
	Sun	E.	50 47 14	2841	49 13 39	2851	47 40 17	2859	46 7 6	2870
17	Antares	W.	70 32 5	2577	72 11 32	2585	73 50 48	2591	75 29 55	2599
	Saturn	W.	39 49 32	2559	41 29 23	2566	43 9 4	2575	44 48 33	2583
	Sun	E.	38 24 30	2923	36 52 40	2935	35 21 5	2946	33 49 45	2960
18	Antares	W.	83 42 49	2639	85 20 51	2648	86 58 41	2655	88 36 21	2664
	Saturn	W.	53 3 13	2624	54 41 35	2632	56 19 46	2641	57 57 45	2650
	Sun	E.	26 17 31	3039	24 48 6	3058	23 19 5	3082	21 50 33	3107
23	Sun	W.	32 41 26	3401	34 3 41	3406	35 25 51	3411	36 47 55	3415

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Aldebaran	E.	38° 34′ 38″	2958	37° 3′ 33″	2969	35° 32′ 41″	2977	34° 2′ 0″	2988
	Pollux	E.	82 47 28	2960	81 16 25	2969	79 45 33	2977	78 14 51	2985
24	Sun	W.	38 9 55	3421	39 31 48	3425	40 53 36	3431	42 15 18	3435
	Pollux	E.	70 43 53	3024	69 14 10	3031	67 44 36	3038	66 15 10	3044
	Regulus	E.	106 37 57	3012	105 7 59	3018	103 38 9	3025	102 8 27	3031
25	Sun	W.	49 2 31	3456	50 23 44	3459	51 44 54	3463	53 5 59	3466
	Venus	W.	23 38 51	3597	24 57 29	3594	26 16 10	3591	27 34 54	3591
	Pollux	E.	58 49 58	3073	57 21 16	3079	55 52 41	3084	54 24 12	3069
	Regulus	E.	94 41 45	3057	93 12 43	3061	91 43 46	3065	90 14 54	3069
26	Sun	W.	59 50 44	3476	61 11 35	3476	62 32 26	3477	63 53 16	3476
	Venus	W.	34 8 44	3587	35 27 33	3586	36 46 23	3585	38 5 14	3583
	α Arietis	W.	31 47 8	3588	33 5 55	3551	34 25 23	3516	35 45 29	3486
	Pollux	E.	47 3 3	3107	45 35 2	3110	44 7 5	3114	42 39 12	3115
	Regulus	E.	82 51 29	3081	81 22 56	3082	79 54 25	3083	78 25 55	3083
	Mars	E.	111 32 29	2936	110 0 56	2938	108 29 25	2939	106 57 55	2939
27	Sun	W.	70 37 40	3469	71 58 39	3466	73 19 41	3462	74 40 48	3459
	Venus	W.	44 40 4	3570	45 59 11	3565	47 18 23	3563	48 37 38	3557
	α Arietis	W.	42 33 28	3372	43 56 17	3353	45 19 27	3337	46 42 56	3320
	Pollux	E.	35 20 26	3127	33 52 49	3129	32 25 14	3131	30 57 42	3134
	Regulus	E.	71 3 21	3079	69 34 46	3077	68 6 8	3074	66 37 27	3071
	Mars	E.	99 20 25	2935	97 48 51	2933	96 17 14	2931	94 45 34	2927
28	Sun	W.	81 27 33	3432	82 49 13	3425	84 11 1	3418	85 32 57	3410
	Venus	W.	55 15 23	3528	56 35 16	3520	57 55 18	3512	59 15 29	3503
	Aldebaran	W.	21 23 20	3085	22 51 48	3073	24 20 30	3062	25 49 26	3051
	Regulus	E.	59 12 56	3049	57 43 44	3043	56 14 25	3038	54 44 59	3030
	Mars	E.	87 6 6	2906	85 33 55	2900	84 1 36	2894	82 29 10	2887
29	Sun	W.	92 25 3	3364	93 48 1	3352	95 11 12	3342	96 34 35	3330
	Venus	W.	65 58 55	3454	67 20 10	3443	68 41 38	3431	70 3 19	3418
	Aldebaran	W.	33 17 28	2997	34 47 45	2985	36 18 16	2973	37 49 2	2962
	Jupiter	W.	20 56 44	3031	22 26 18	3020	23 56 6	3009	25 26 7	2998
	Regulus	E.	47 15 33	2992	45 45 10	2982	44 14 35	2973	42 43 48	2964
	Mars	E.	74 44 39	2848	73 11 13	2838	71 37 35	2829	70 3 45	2818
	Spica	E.	101 16 32	3011	99 46 33	3000	98 16 20	2989	96 45 53	2976
30	Sun	W.	103 35 5	3265	104 59 57	3251	106 25 6	3237	107 50 31	3222
	Venus	W.	76 55 25	3351	78 18 37	3336	79 42 7	3321	81 5 54	3305
	Aldebaran	W.	45 26 45	2898	46 59 7	2883	48 31 47	2869	50 4 46	2855
	Jupiter	W.	32 59 53	2936	34 31 26	2923	36 3 16	2909	37 35 23	2894
	Regulus	E.	35 6 47	2911	33 34 42	2900	32 2 23	2890	30 29 51	2878
	Mars	E.	62 11 5	2763	60 35 48	2750	59 0 14	2738	57 24 24	2723
	Spica	E.	89 9 56	2916	87 37 57	2902	86 5 41	2890	84 33 9	2876
31	Sun	W.	115 2 13	3143	116 29 31	3127	117 57 8	3109	119 25 7	3092
	Venus	W.	88 9 30	3222	89 35 13	3205	91 1 16	3187	92 27 41	3169
	Aldebaran	W.	57 54 24	2779	59 29 20	2762	61 4 38	2747	62 40 16	2729
	Jupiter	W.	45 20 41	2819	46 54 44	2804	48 29 7	2787	50 3 52	2772
	Mars	E.	49 20 38	2653	47 42 55	2640	46 4 54	2623	44 26 30	2610
	Spica	E.	76 45 52	2802	75 11 27	2788	73 36 43	2772	72 1 38	2756

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L of Diff.	XXIh.	P. L. of Diff.
23	Aldebaran	E.	32° 31′ 32″	2997	31° 1′ 16″	3008	29° 31′ 13″	3018	28° 1′ 22″	3028
	Pollux	E.	76 44 20	2993	75 13 59	3001	73 43 47	3011	72 13 45	3014
24	Sun	W.	43 36 55	3439	44 58 27	3446	46 19 52	3448	47 41 14	3453
	Pollux	E.	64 45 52	3051	63 16 42	3057	61 47 40	3063	60 18 45	3069
	Regulus	E.	100 38 53	3038	99 9 27	3042	97 40 6	3047	96 10 52	3053
25	Sun	W.	54 27 1	3469	55 48 0	3471	57 8 57	3473	58 29 51	3474
	Venus	W.	28 53 38	3589	30 12 24	3589	31 31 10	3588	32 49 57	3588
	Pollux	E.	52 55 49	3092	51 27 30	3097	49 59 17	3101	48 31 8	3104
	Regulus	E.	88 46 6	3072	87 17 22	3075	85 48 42	3077	84 20 4	3079
26	Sun	W.	65 14 7	3476	66 34 58	3475	67 55 50	3475	69 16 42	3470
	Venus	W.	39 24 7	3581	40 43 2	3578	42 2 0	3576	43 21 0	3573
	α Arietis	W.	37 6 9	3459	38 27 19	3434	39 48 57	3412	41 11 0	3390
	Pollux	E.	41 11 21	3118	39 43 33	3120	38 15 48	3123	36 48 6	3124
	Regulus	E.	76 57 25	3084	75 28 56	3082	74 0 25	3082	72 31 54	3086
	Mars	E.	105 26 26	2939	103 54 57	2939	102 23 27	2939	100 51 57	2937
27	Sun	W.	76 1 58	3454	77 23 13	3450	78 44 33	3444	80 6 0	3438
	Venus	W.	49 56 59	3553	51 16 25	3546	52 35 58	3541	53 55 37	3535
	α Arietis	W.	48 6 44	3305	49 30 50	3289	50 55 14	3276	52 19 54	3261
	Pollux	E.	29 30 14	3137	28 2 49	3141	26 35 29	3145	25 8 14	3152
	Regulus	E.	65 8 42	3068	63 39 53	3065	62 11 0	3060	60 42 1	3055
	Mars	E.	93 13 50	2924	91 42 2	2920	90 10 9	2916	88 38 11	2911
28	Sun	W.	86 55 2	3401	88 17 17	3393	89 39 41	3383	91 2 17	3374
	Venus	W.	60 35 50	3495	61 56 20	3486	63 17 0	3475	64 37 52	3465
	Aldebaran	W.	27 18 36	3041	28 47 58	3030	30 17 34	3018	31 47 25	3008
	Regulus	E.	53 15 24	3024	51 45 41	3016	50 15 48	3009	48 45 46	3000
	Mars	E.	80 56 35	2880	79 23 51	2873	77 50 58	2865	76 17 54	2856
29	Sun	W.	97 58 12	3318	99 22 3	3306	100 46 8	3292	102 10 29	3279
	Venus	W.	71 25 15	3407	72 47 24	3393	74 9 49	3379	75 32 29	3365
	Aldebaran	W.	39 20 3	2948	40 51 21	2938	42 22 52	2925	43 54 39	2910
	Jupiter	W.	26 56 22	2986	28 26 52	2974	29 57 37	2962	31 28 37	2950
	Regulus	E.	41 12 50	2953	39 41 38	2944	38 10 15	2933	36 38 38	2922
	Mars	E.	68 29 41	2808	66 55 24	2798	65 20 53	2786	63 46 7	2774
	Spica	E.	95 15 12	2965	93 44 16	2954	92 13 5	2942	90 41 39	2928
30	Sun	W.	109 16 14	3206	110 42 16	3191	112 8 36	3175	113 35 15	3159
	Venus	W.	82 30 0	3290	83 54 23	3273	85 19 6	3257	86 44 8	3240
	Aldebaran	W.	51 38 3	2840	53 11 39	2825	54 45 34	2810	56 19 49	2795
	Jupiter	W.	39 7 49	2880	40 40 33	2866	42 13 36	2851	43 46 58	2835
	Regulus	E.	28 57 4	2868	27 24 4	2857	25 50 50	2847	24 17 23	2838
	Mars	E.	55 48 15	2710	54 11 49	2696	52 35 4	2683	50 58 1	2668
	Spica	E.	83 0 19	2861	81 27 10	2847	79 53 43	2832	78 19 57	2818
31	Sun	W.	120 53 26	3074	122 22 7	3058	123 51 8	3040	125 20 31	3022
	Venus	W.	93 54 27	3150	95 21 36	3133	96 49 5	3113	98 16 59	3096
	Aldebaran	W.	64 16 17	2713	65 52 40	2696	67 29 25	2680	69 6 32	2661
	Jupiter	W.	51 38 57	2753	53 14 26	2738	54 50 16	2720	56 26 29	2704
	Mars	E.	42 47 48	2593	41 8 44	2577	39 29 18	2561	37 49 30	2546
	Spica	E.	70 26 13	2740	68 50 26	2725	67 14 19	2708	65 37 50	2692

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 hour.	THE SUN'S Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to* / *subtracted from* *Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sat.	1	0 41 37.89	9.094	N. 4 28 55.7	+57.86	16 2.12	64.50	4 0.34	0.760
Sun.	2	0 45 16.20	9.097	4 52 1.8	57.65	16 1.85	64.52	3 42.14	0.757
Mon.	3	0 48 54.61	9.103	5 15 2.5	57.43	16 1.58	64.54	3 24.06	0.751
Tues.	4	0 52 33.16	9.109	5 37 57.7	57.19	16 1.30	64.56	3 6.09	0.745
Wed.	5	0 56 11.86	9.117	6 0 47.1	56.93	16 1.03	64.58	2 48.29	0.737
Thur.	6	0 59 50.74	9.125	6 23 30.2	56.66	16 0.75	64.61	2 30.67	0.729
Frid.	7	1 3 29.84	9.134	6 46 6.6	56.38	16 0.47	64.64	2 13.26	0.720
Sat.	8	1 7 9.16	9.144	7 8 36.2	56.09	16 0.19	64.67	1 56.08	0.710
Sun.	9	1 10 48.73	9.155	7 30 58.7	55.78	15 59.91	64.71	1 39.15	0.699
Mon.	10	1 14 28.57	9.166	7 53 13.7	55.46	15 59.64	64.75	1 22.48	0.688
Tues.	11	1 18 8.69	9.178	8 15 20.8	55.12	15 59.36	64.79	1 6.09	0.676
Wed.	12	1 21 49.11	9.190	8 37 19.7	54.78	15 59.09	64.84	0 50.00	0.664
Thur.	13	1 25 29.86	9.204	8 59 10.2	54.42	15 58.81	64.88	0 34.23	0.650
Frid.	14	1 29 10.95	9.218	9 20 51.9	54.04	15 58.54	64.93	0 18.81	0.636
Sat.	15	1 32 52.38	9.233	9 42 24.4	53.66	15 58.27	64.98	0 3.74	0.621
Sun.	16	1 36 34.18	9.249	10 3 47.3	53.25	15 58.00	65.03	0 10.98	0.606
Mon.	17	1 40 16.36	9.265	10 25 0.3	52.83	15 57.73	65.08	0 25.32	0.590
Tues.	18	1 43 58.93	9.282	10 46 3.3	52.41	15 57.46	65.14	0 39.26	0.573
Wed.	19	1 47 41.89	9.299	11 6 55.7	51.96	15 57.20	65.20	0 52.81	0.556
Thur.	20	1 51 25.26	9.316	11 27 37.1	51.49	15 56.94	65.26	1 5.96	0.539
Frid.	21	1 55 9.05	9.334	11 48 7.3	51.02	15 56.68	65.32	1 18.69	0.521
Sat.	22	1 58 53.28	9.352	12 8 25.9	50.52	15 56.42	65.39	1 30.98	0.503
Sun.	23	2 2 37.95	9.371	12 28 32.4	50.01	15 56.17	65.46	1 42.83	0.484
Mon.	24	2 6 23.06	9.390	12 48 26.6	49.50	15 55.93	65.53	1 54.24	0.465
Tues.	25	2 10 8.64	9.409	13 8 8.2	48.97	15 55.68	65.60	2 5.18	0.446
Wed.	26	2 13 54.69	9.429	13 27 36.9	48.42	15 55.44	65.67	2 15.64	0.426
Thur.	27	2 17 41.22	9.449	13 46 52.1	47.85	15 55.20	65.74	2 25.64	0.406
Frid.	28	2 21 28.23	9.469	14 5 53.6	47.27	15 54.96	65.80	2 35.17	0.386
Sat.	29	2 25 15.74	9.489	14 24 41.1	46.69	15 54.72	65.88	2 44.21	0.366
Sun.	30	2 29 3.74	9.510	14 43 14.5	46.09	15 54.49	65.96	2 52.74	0.345
Mon.	31	2 32 52.25	9.532	N. 15 1 33.3	+45.47	15 54.26	66.04	3 0.76	0.323

NOTE.—*Mean Time of the Semidiameter passing may be found by subtracting* 0s.18 *from the Sidereal Time.*

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subt'd from*		Sidereal Time, or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	*added to Mean Time.*	Diff. for 1 hour.	
		h m s	s	° ′ ″	″	m s	s	h m s
Sat.	1	0 41 37.29	9.096	N. 4 28 51.9	+57.87	4 0.39	0.760	0 37 36.90
Sun.	2	0 45 15.65	9.099	4 51 58.3	57.66	3 42.20	0.757	0 41 33.45
Mon.	3	0 48 54.10	9.105	5 14 59.4	57.44	3 24.10	0.751	0 45 30.00
Tues.	4	0 52 32.69	9.111	5 37 54.8	57.20	3 6.13	0.745	0 49 26.56
Wed.	5	0 56 11.43	9.119	6 0 44.5	56.94	2 48.32	0.737	0 53 23.11
Thur.	6	0 59 50.36	9.127	6 23 27.9	56.67	2 30.70	0.729	0 57 19.66
Frid.	7	1 3 29.51	9.136	6 46 4.6	56.39	2 13.29	0.720	1 1 16.22
Sat.	8	1 7 8.88	9.146	7 8 34.5	56.10	1 56.11	0.710	1 5 12.77
Sun.	9	1 10 48.49	9.157	7 30 57.3	55.79	1 39.17	0.699	1 9 9.32
Mon.	10	1 14 28.37	9.168	7 53 12.5	55.47	1 22.49	0.688	1 13 5.88
Tues.	11	1 18 8.53	9.180	8 15 19.8	55.13	1 6.10	0.676	1 17 2.43
Wed.	12	1 21 48.99	9.192	8 37 19.0	54.79	0 50.01	0.664	1 20 58.98
Thur.	13	1 25 29.78	9.206	8 59 9.6	54.43	0 34.24	0.650	1 24 55.54
Frid.	14	1 29 10.91	9.220	9 20 51.6	54.05	0 18.82	0.636	1 28 52.09
Sat.	15	1 32 52.38	9.235	9 42 24.3	53.67	0 3.74	0.621	1 32 48.64
Sun.	16	1 36 34.22	9.250	10 3 47.4	53.26	0 10.98	0.606	1 36 45.20
Mon.	17	1 40 16.43	9.266	10 25 0.8	52.84	0 25.32	0.590	1 40 41.75
Tues.	18	1 43 59.04	9.283	10 46 3.9	52.42	0 39.26	0.573	1 44 38.30
Wed.	19	1 47 42.04	9.300	11 6 56.5	51.97	0 52.82	0.556	1 48 34.86
Thur.	20	1 51 25.44	9.317	11 27 38.1	51.50	1 5.97	0.539	1 52 31.41
Frid.	21	1 55 9.27	9.335	11 48 8.5	51.03	1 18.70	0.521	1 56 27.97
Sat.	22	1 58 53.53	9.353	12 8 27.2	50.53	1 30.99	0.503	2 0 24.52
Sun.	23	2 2 38.23	9.372	12 28 33.9	50.02	1 42.84	0.484	2 4 21.07
Mon.	24	2 6 23.37	9.391	12 48 28.3	49.50	1 54.25	0.465	2 8 17.62
Tues.	25	2 10 8.98	9.410	13 8 10.1	48.97	2 5.20	0.446	2 12 14.18
Wed.	26	2 13 55.06	9.430	13 27 38.8	48.42	2 15.68	0.426	2 16 10.74
Thur.	27	2 17 41.61	9.450	13 46 54.1	47.85	2 25.68	0.406	2 20 7.29
Frid.	28	2 21 28.65	9.470	14 5 55.7	47.27	2 35.20	0.386	2 24 3.85
Sat.	29	2 25 16.18	9.490	14 24 43.4	46.69	2 44.23	0.366	2 28 0.41
Sun.	30	2 29 4.20	9.511	14 43 16.8	46.09	2 52.76	0.345	2 31 56.96
Mon.	31	2 32 52.73	9.533	N.15 1 35.6	+45.47	3 0.78	0.323	2 35 53.51

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour $+9^s.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S True LONGITUDE. λ	THE SUN'S True LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	91	11 19 30.1	19 35.4	147.81	+0.43	9.9999459	+51.2	23 18 33.35
2	92	12 18 36.6	18 41.8	147.72	0.51	0.0000691	51.4	23 14 37.45
3	93	13 17 40.8	17 45.9	147.64	0.56	.0001926	51.6	23 10 41.54
4	94	14 16 43.0	16 48.0	147.55	0.57	.0003167	51.8	23 6 45.63
5	95	15 15 43.1	15 48.0	147.46	0.56	.0004411	52.0	23 2 49.72
6	96	16 14 41.1	14 45.9	147.38	0.52	.0005658	52.1	22 58 53.82
7	97	17 13 37.2	13 41.9	147.30	0.44	.0006909	52.2	22 54 57.91
8	98	18 12 31.4	12 36.0	147.22	0.34	.0008163	52.3	22 51 2.00
9	99	19 11 23.8	11 28.2	147.14	0.24	.0009419	52.3	22 47 6.09
10	100	20 10 14.4	10 18.7	147.07	+0.12	.0010675	52.3	22 43 10.19
11	101	21 9 3.3	9 7.5	147.00	−0.01	.0011930	52.2	22 39 14.28
12	102	22 7 50.5	7 54.6	146.93	0.14	.0013181	52.0	22 35 18.37
13	103	23 6 36.0	6 40.0	146.86	0.27	.0014427	51.8	22 31 22.46
14	104	24 5 19.8	5 23.7	146.79	0.38	.0015668	51.5	22 27 26.56
15	105	25 4 1.8	4 5.6	146.71	0.47	.0016902	51.2	22 23 30.65
16	106	26 2 42.1	2 45.8	146.64	0.54	.0018127	50.8	22 19 34.74
17	107	27 1 20.7	1 24.3	146.56	0.57	.0019341	50.3	22 15 38.83
18	108	27 59 57.5	60 1.0	146.49	0.57	.0020544	49.8	22 11 42.92
19	109	28 58 32.5	58 35.9	146.41	0.54	.0021734	49.3	22 7 47.01
20	110	29 57 5.6	57 8.8	146.34	0.48	.0022911	48.8	22 3 51.10
21	111	30 55 36.7	55 39.8	146.26	0.39	.0024075	48.2	21 59 55.19
22	112	31 54 5.9	54 8.9	146.18	0.29	.0025226	47.6	21 55 59.29
23	113	32 52 33.1	52 36.0	146.09	0.18	.0026363	47.1	21 52 3.38
24	114	33 50 58.2	51 1.0	146.00	−0.06	.0027487	46.6	21 48 7.47
25	115	34 49 21.2	49 23.9	145.91	+0.08	.0028599	46.1	21 44 11.56
26	116	35 47 42.1	47 44.7	145.83	0.22	.0029700	45.6	21 40 15.66
27	117	36 46 0.9	46 3.4	145.74	0.35	.0030790	45.2	21 36 19.75
28	118	37 44 17.7	44 20.0	145.66	0.45	.0031871	44.8	21 32 23.84
29	119	38 42 32.4	42 34.6	145.57	0.53	.0032944	44.5	21 28 27.93
30	120	39 40 45.1	40 47.1	145.49	0.59	.0034011	44.2	21 24 32.02
31	121	40 38 55.8	38 57.7	145.41	+0.61	0.0035071	+44.0	21 20 36.11

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the mean equinox of January 0d.

Diff. for 1 hour $-9^{s}.8296$

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 31.4	15 38.5	56 51.8	+2.12	57 17.6	+2.18	9 8.4	2.12	11.3
2	15 45.6	15 52.7	57 43.9	2.19	58 10.1	2.16	9 59.1	2.10	12.3
3	15 59.7	16 6.3	58 35.6	2.08	58 59.8	1.95	10 49.5	2.10	13.3
4	16 12.4	16 17.8	59 22.2	1.77	59 42.2	1.55	11 40.1	2.12	14.3
5	16 22.5	16 26.2	59 59.2	1.29	60 13.0	1.00	12 31.5	2.17	15.3
6	16 29.0	16 30.7	60 23.1	0.69	60 29.5	+0.37	13 24.5	2.25	16.3
7	16 31.4	16 31.1	60 32.0	+0.05	60 30.8	−0.26	14 19.7	2.35	17.3
8	16 29.7	16 27.5	60 25.9	−0.55	60 17.7	0.81	15 17.4	2.45	18.3
9	16 24.5	16 20.8	60 6.7	1.03	59 53.2	1.22	16 17.0	2.51	19.3
10	16 16.6	16 12.0	59 37.6	1.37	59 20.5	1.47	17 17.3	2.50	20.3
11	16 7.0	16 1.8	59 2.4	1.55	58 43.5	1.59	18 16.6	2.43	21.3
12	15 56.6	15 51.4	58 24.2	1.61	58 5.0	1.60	19 13.4	2.30	22.3
13	15 46.1	15 41.0	57 45.8	1.58	57 27.0	1.54	20 6.8	2.15	23.3
14	15 36.1	15 31.3	57 8.8	1.50	56 51.1	1.44	20 56.6	2.01	24.3
15	15 26.6	15 22.2	56 34.2	1.38	56 18.0	1.32	21 43.4	1.89	25.3
16	15 18.0	15 14.0	56 2.4	1.26	55 47.7	1.20	22 27.8	1.82	26.3
17	15 10.2	15 6.6	55 33.7	1.13	55 20.5	1.07	23 10.8	1.77	27.3
18	15 3.2	15 0.1	55 8.1	1.00	54 56.6	0.93	23 53.2	1.77	28.3
19	14 57.2	14 54.5	54 45.9	0.85	54 36.1	0.77	δ		29.3
20	14 52.1	14 50.0	54 27.4	0.68	54 19.7	0.59	0 35.8	1.79	0.7
21	14 48.3	14 46.9	54 13.3	0.48	54 8.2	0.37	1 19.2	1.83	1.7
22	14 45.9	14 45.4	54 4.5	−0.24	54 2.5	−0.10	2 4.0	1.90	2.7
23	14 45.3	14 45.7	54 2.2	+0.05	54 3.8	+0.22	2 50.4	1.97	3.7
24	14 46.7	14 48.3	54 7.5	0.39	54 13.3	0.58	3 38.4	2.03	4.7
25	14 50.5	14 53.3	54 21.3	0.77	54 31.7	0.96	4 27.8	2.08	5.7
26	14 56.7	15 0.8	54 44.3	1.15	54 59.4	1.35	5 17.9	2.10	6.7
27	15 5.6	15 10.9	55 16.7	1.54	55 36.4	1.73	6 8.3	2.09	7.7
28	15 16.9	15 23.4	55 58.3	1.91	56 22.1	2.06	6 58.4	2.07	8 7
29	15 30.3	15 37.7	56 47.7	2.20	57 14.8	2.30	7 47.9	2.05	9.7
30	15 45.4	15 53.2	57 42.9	2.37	58 11.5	2.39	8 37.2	2.05	10.7
31	16 1.0	16 8.6	58 40.1	+2.37	59 8.1	+2.29	9 26.5	2.07	11.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 27 11.63	2.2217	N.18 39 35.7	8.224
1	9 29 24.91	2.2211	18 31 18.9	8.333
2	9 31 38.15	2.2204	18 22 55.6	8.442
3	9 33 51.35	2.2197	18 14 25.8	8.550
4	9 36 4.51	2.2190	18 5 49.6	8.657
5	9 38 17.63	2.2183	17 57 7.0	8.763
6	9 40 30.71	2.2175	17 48 18.0	8.869
7	9 42 43.74	2.2168	17 39 22.7	8.974
8	9 44 56.72	2.2160	17 30 21.1	9.079
9	9 47 9.66	2.2153	17 21 13.2	9.184
10	9 49 22.56	2.2146	17 11 59.0	9.288
11	9 51 35.41	2.2139	17 2 38.6	9.391
12	9 53 48.22	2.2131	16 53 12.0	9.493
13	9 56 0.98	2.2124	16 43 39.2	9.595
14	9 58 13.70	2.2117	16 34 0.3	9.697
15	10 0 26.37	2.2109	16 24 15.4	9.797
16	10 2 39.00	2.2102	16 14 24.5	9.897
17	10 4 51.59	2.2094	16 4 27.6	9.996
18	10 7 4.13	2.2087	15 54 24.8	10.095
19	10 9 16.63	2.2079	15 44 16.2	10.192
20	10 11 29.08	2.2072	15 34 1.8	10.288
21	10 13 41.49	2.2065	15 23 41.6	10.384
22	10 15 53.86	2.2058	15 13 15.7	10.480
23	10 18 6.19	2.2051	N.15 2 44.1	10.574

SUNDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 20 18.48	2.2044	N.14 52 6.8	10.668
1	10 22 30.73	2.2037	14 41 23.9	10.762
2	10 24 42.94	2.2031	14 30 35.4	10.855
3	10 26 55.11	2.2024	14 19 41.3	10.946
4	10 29 7.24	2.2018	14 8 41.7	11.037
5	10 31 19.33	2.2012	13 57 36.7	11.127
6	10 33 31.38	2.2006	13 46 26.3	11.216
7	10 35 43.39	2.2000	13 35 10.6	11.303
8	10 37 55.37	2.1994	13 23 49.7	11.390
9	10 40 7.31	2.1988	13 12 23.6	11.476
10	10 42 19.22	2.1983	12 0 52.4	11.561
11	10 44 31.10	2.1978	12 49 16.1	11.646
12	10 46 42.95	2.1973	12 37 34.8	11.730
13	10 48 54.76	2.1968	12 25 48.5	11.813
14	10 51 6.54	2.1963	12 13 57.2	11.895
15	10 53 18.30	2.1958	12 2 1.0	11.975
16	10 55 30.04	2.1954	11 50 0.0	12.055
17	10 57 41.76	2.1950	11 37 54.2	12.134
18	10 59 53.45	2.1947	11 25 43.7	12.213
19	11 2 5.12	2.1943	11 13 28.6	12.289
20	11 4 16.77	2.1940	11 1 8.9	12.365
21	11 6 28.40	2.1937	10 48 44.7	12.439
22	11 8 40.02	2.1935	10 36 16.1	12.513
23	11 10 51.63	2.1933	10 23 43.1	12.583
24	11 13 3.23	2.1931	N.10 11 5.9	12.657

MONDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 13 3.23	2.1931	N.10 11 5.9	12.657
1	11 15 14.82	2.1929	9 58 24.4	12.727
2	11 17 26.40	2.1928	9 45 38.6	12.797
3	11 19 37.97	2.1927	9 32 48.7	12.865
4	11 21 49.53	2.1927	9 19 54.7	12.932
5	11 24 1.08	2.1927	9 6 56.7	12.998
6	11 26 12.63	2.1927	8 53 54.8	13.063
7	11 28 24.18	2.1927	8 40 49.1	13.126
8	11 30 35.73	2.1928	8 27 39.6	13.188
9	11 32 47.30	2.1929	8 14 26.4	13.249
10	11 34 58.88	2.1930	8 1 9.6	13.310
11	11 37 10.47	2.1932	7 47 49.2	13.369
12	11 39 22.07	2.1934	7 34 25.3	13.427
13	11 41 33.68	2.1937	7 20 57.9	13.483
14	11 43 45.31	2.1940	7 7 27.2	13.538
15	11 45 56.96	2.1943	6 53 53.2	13.591
16	11 48 8.63	2.1947	6 40 16.0	13.644
17	11 50 20.32	2.1951	6 26 35.7	13.695
18	11 52 32.04	2.1956	6 12 52.3	13.745
19	11 54 43.79	2.1961	5 59 5.9	13.794
20	11 56 55.57	2.1967	5 45 16.7	13.842
21	11 59 7.39	2.1973	5 31 24.8	13.888
22	12 1 19.24	2.1979	5 17 30.2	13.933
23	12 3 31.13	2.1986	N. 5 3 33.0	13.976

TUESDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 5 43.06	2.1993	N. 4 49 33.3	14.017
1	12 7 55.03	2.2001	4 35 31.1	14.057
2	12 10 7.05	2.2009	4 21 26.4	14.097
3	12 12 19.12	2.2018	4 7 19.4	14.135
4	12 14 31.24	2.2027	3 53 10.1	14.172
5	12 16 43.42	2.2036	3 38 58.6	14.208
6	12 18 55.67	2.2046	3 24 45.0	14.242
7	12 21 7.98	2.2056	3 10 29.4	14.274
8	12 23 20.35	2.2067	2 56 11.9	14.305
9	12 25 32.79	2.2078	2 41 52.6	14.335
10	12 27 45.30	2.2090	2 27 31.6	14.363
11	12 29 57.88	2.2103	2 13 8.9	14.390
12	12 32 10.54	2.2116	1 58 44.7	14.415
13	12 34 23.27	2.2129	1 44 19.1	14.438
14	12 36 36.08	2.2143	1 29 52.1	14.460
15	12 38 48.98	2.2157	1 15 23.8	14.480
16	12 41 1.97	2.2172	1 0 54.3	14.498
17	12 43 15.05	2.2187	0 46 23.8	14.516
18	12 45 28.22	2.2203	0 31 52.3	14.532
19	12 47 41.49	2.2220	0 17 19.9	14.546
20	12 49 54.86	2.2237	N. 0 2 46.7	14.558
21	12 52 8.33	2.2254	S. 0 11 47.2	14.570
22	12 54 21.90	2.2272	0 26 21.8	14.580
23	12 56 35.58	2.2290	0 40 56.9	14.588
24	12 58 49.37	2.2309	S. 0 55 32.4	14.595

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 58 49.37	2.2309	S. 0 55 32.4	14.595
1	13 1 3.27	2.2328	1 10 8.2	14.600
2	13 3 17.29	2.2348	1 24 44.3	14.603
3	13 5 31.43	2.2368	1 39 20.6	14.603
4	13 7 45.69	2.2389	1 53 57.0	14.603
5	13 10 0.09	2.2410	2 8 33.3	14.601
6	13 12 14.62	2.2432	2 23 9.4	14.598
7	13 14 29.28	2.2454	2 37 45.3	14.593
8	13 16 44.07	2.2477	2 52 20.9	14.587
9	13 18 59.00	2.2500	3 6 56.1	14.579
10	13 21 14.07	2.2524	3 21 30.7	14.570
11	13 23 29.29	2.2548	3 36 4.6	14.558
12	13 25 44.65	2.2573	3 50 37.7	14.545
13	13 28 0.15	2.2598	4 5 10.0	14.530
14	13 30 15.80	2.2623	4 19 41.4	14.513
15	13 32 31.61	2.2649	4 34 11.8	14.495
16	13 34 47.59	2.2676	4 48 41.0	14.475
17	13 37 3.73	2.2703	5 3 9.0	14.453
18	13 39 20.04	2.2731	5 17 35.6	14.430
19	13 41 36.51	2.2759	5 32 0.8	14.405
20	13 43 53.15	2.2787	5 46 24.4	14.378
21	13 46 9.96	2.2816	6 0 46.4	14.350
22	13 48 26.94	2.2845	6 15 6.6	14.320
23	13 50 44.10	2.2875	S. 6 29 24.9	14.288

THURSDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 53 1.44	2.2905	S. 6 43 41.1	14.254
1	13 55 18.96	2.2936	6 57 55.3	14.219
2	13 57 36.66	2.2967	7 12 7.4	14.182
3	13 59 54.55	2.2998	7 26 17.2	14.143
4	14 2 12.64	2.3030	7 40 24.6	14.102
5	14 4 30.92	2.3062	7 54 29.6	14.059
6	14 6 49.39	2.3094	8 8 32.0	14.015
7	14 9 8.05	2.3127	8 22 31.6	13.969
8	14 11 26.91	2.3160	8 36 28.5	13.922
9	14 13 45.97	2.3194	8 50 22.4	13.873
10	14 16 5.23	2.3228	9 4 13.3	13.822
11	14 18 24.70	2.3262	9 18 1.1	13.768
12	14 20 44.38	2.3297	9 31 45.7	13.713
13	14 23 4.26	2.3332	9 45 26.9	13.656
14	14 25 24.35	2.3367	9 59 4.7	13.598
15	14 27 44.65	2.3402	10 12 39.0	13.539
16	14 30 5.17	2.3438	10 26 9.7	13.478
17	14 32 25.91	2.3474	10 39 36.6	13.415
18	14 34 46.87	2.3511	10 52 59.7	13.350
19	14 37 8.05	2.3548	11 6 18.8	13.283
20	14 39 29.45	2.3585	11 19 33.9	13.215
21	14 41 51.07	2.3622	11 32 44.8	13.145
22	14 44 12.91	2.3659	11 45 51.4	13.073
23	14 46 34.98	2.3697	11 58 53.7	13.000
24	14 48 57.27	2.3735	S. 12 11 51.5	12.925

FRIDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 48 57.27	2.3735	S. 12 11 51.5	12.925
1	14 51 19.78	2.3773	12 24 44.7	12.848
2	14 53 42.52	2.3811	12 37 33.3	12.769
3	14 56 5.49	2.3849	12 50 17.1	12.688
4	14 58 28.69	2.3887	13 2 56.0	12.605
5	15 0 52.13	2.3925	13 15 29.9	12.521
6	15 3 15.80	2.3963	13 27 58.8	12.436
7	15 5 39.70	2.4001	13 40 22.5	12.349
8	15 8 3.83	2.4040	13 52 41.0	12.261
9	15 10 28.19	2.4079	14 4 54.1	12.170
10	15 12 52.78	2.4118	14 17 1.7	12.078
11	15 15 17.60	2.4156	14 29 3.6	11.984
12	15 17 42.65	2.4195	14 40 59.8	11.888
13	15 20 7.94	2.4234	14 52 50.3	11.791
14	15 22 33.46	2.4273	15 4 35.0	11.693
15	15 24 59.21	2.4312	15 16 13.7	11.593
16	15 27 25.19	2.4350	15 27 46.4	11.492
17	15 29 51.40	2.4389	15 39 12.9	11.389
18	15 32 17.84	2.4427	15 50 33.2	11.285
19	15 34 44.51	2.4465	16 1 47.2	11.179
20	15 37 11.41	2.4503	16 12 54.8	11.072
21	15 39 38.54	2.4541	16 23 55.9	10.963
22	15 42 5.90	2.4578	16 34 50.4	10.852
23	15 44 33.49	2.4616	S. 16 45 38.2	10.739

SATURDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 47 1.30	2.4653	S. 16 56 19.1	10.625
1	15 49 29.34	2.4690	17 6 53.2	10.510
2	15 51 57.60	2.4727	17 17 20.3	10.393
3	15 54 26.08	2.4764	17 27 40.4	10.275
4	15 56 54.77	2.4800	17 37 53.4	10.155
5	15 59 23.68	2.4836	17 47 59.2	10.034
6	16 1 52.80	2.4871	17 57 57.7	9.912
7	16 4 22.13	2.4906	18 7 48.8	9.788
8	16 6 51.67	2.4940	18 17 32.5	9.663
9	16 9 21.41	2.4975	18 27 8.6	9.537
10	16 11 51.36	2.5009	18 36 37.1	9.409
11	16 14 21.51	2.5043	18 45 57.9	9.280
12	16 16 51.86	2.5076	18 55 10.8	9.150
13	16 19 22.42	2.5108	19 4 15.9	9.019
14	16 21 53.17	2.5140	19 13 13.2	8.887
15	16 24 24.11	2.5172	19 22 2.5	8.753
16	16 26 55.24	2.5203	19 30 43.7	8.618
17	16 29 26.55	2.5233	19 39 16.8	8.483
18	16 31 58.03	2.5263	19 47 41.7	8.346
19	16 34 29.69	2.5292	19 55 58.3	8.208
20	16 37 1.52	2.5320	20 4 6.6	8.069
21	16 39 33.52	2.5347	20 12 6.6	7.929
22	16 42 5.68	2.5374	20 19 58.2	7.787
23	16 44 38.00	2.5401	20 27 41.3	7.645
24	16 47 10.48	2.5427	S. 20 35 15.8	7.502

APRIL, 1871.

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 9.					TUESDAY 11.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	16 47 10.48	2.5427	S. 20 35 15.8	7.502	0	18 50 27.95	2.5548	S. 23 38 13.6	−0.018
1	16 49 43.12	2.5452	20 42 41.6	7.357	1	18 53 1.19	2.5525	23 38 10.0	+0.138
2	16 52 15.91	2.5476	20 49 58.7	7.212	2	18 55 34.27	2.5501	23 37 57.0	0.294
3	16 54 48.84	2.5499	20 57 7.0	7.066	3	18 58 7.20	2.5475	23 37 34.7	0.450
4	16 57 21.91	2.5522	21 4 6.5	6.919	4	19 0 39.98	2.5449	23 37 3.0	0.605
5	16 59 55.11	2.5544	21 10 57.2	6.771	5	19 3 12.60	2.5421	23 36 21.9	0.760
6	17 2 28.44	2.5565	21 17 39.0	6.623	6	19 5 45.05	2.5393	23 35 31.5	0.914
7	17 5 1.90	2.5585	21 24 11.8	6.473	7	19 8 17.32	2.5363	23 34 31.9	1.068
8	17 7 35.47	2.5604	21 30 35.7	6.323	8	19 10 49.40	2.5333	23 33 23.1	1.221
9	17 10 9.15	2.5622	21 36 50.6	6.172	9	19 13 21.30	2.5301	23 32 5.1	1.373
10	17 12 42.94	2.5640	21 42 56.5	6.020	10	19 15 53.01	2.5269	23 30 38.0	1.525
11	17 15 16.83	2.5657	21 48 53.3	5.868	11	19 18 24.53	2.5236	23 29 1.8	1.677
12	17 17 50.82	2.5673	21 54 40.9	5.715	12	19 20 55.85	2.5202	23 27 16.6	1.827
13	17 20 24.91	2.5688	22 0 19.2	5.561	13	19 23 26.96	2.5166	23 25 22.4	1.977
14	17 22 59.09	2.5702	22 5 48.3	5.407	14	19 25 57.86	2.5130	23 23 19.2	2.126
15	17 25 33.35	2.5715	22 11 8.1	5.252	15	19 28 28.54	2.5093	23 21 7.1	2.275
16	17 28 7.68	2.5727	22 16 18.6	5.097	16	19 30 58.99	2.5056	23 18 46.1	2.423
17	17 30 42.08	2.5738	22 21 19.8	4.941	17	19 33 29.21	2.5017	23 16 16.3	2.570
18	17 33 16.54	2.5748	22 26 11.6	4.784	18	19 35 59.20	2.4978	23 13 37.7	2.716
19	17 35 51.05	2.5757	22 30 54.0	4.627	19	19 38 28.95	2.4938	23 10 50.4	2.861
20	17 38 25.61	2.5765	22 35 26.9	4.470	20	19 40 58.46	2.4897	23 7 54.5	3.005
21	17 41 0.22	2.5771	22 39 50.3	4.313	21	19 43 27.72	2.4855	23 4 50.0	3.148
22	17 43 34.86	2.5777	22 44 4.3	4.155	22	19 45 56.72	2.4813	23 1 36.8	3.290
23	17 46 9.53	2.5781	S. 22 48 8.8	3.997	23	19 48 25.47	2.4770	S. 22 58 15.1	3.432
MONDAY 10.					WEDNESDAY 12.				
0	17 48 44.23	2.5785	S. 22 52 3.8	3.838	0	19 50 53.96	2.4726	S. 22 54 44.9	3.572
1	17 51 18.96	2.5788	22 55 49.4	3.679	1	19 53 22.19	2.4681	22 51 6.3	3.712
2	17 53 53.70	2.5790	22 59 25.4	3.520	2	19 55 50.15	2.4636	22 47 19.3	3.851
3	17 56 28.45	2.5790	23 2 51.9	3.361	3	19 58 17.84	2.4590	22 43 24.0	3.990
4	17 59 3.20	2.5790	23 6 8.9	3.202	4	20 0 45.25	2.4543	22 39 20.4	4.126
5	18 1 37.94	2.5788	23 9 16.0	3.042	5	20 3 12.37	2.4496	22 35 8.6	4.262
6	18 4 12.67	2.5785	23 12 13.3	2.882	6	20 5 39.20	2.4448	22 30 48.8	4.396
7	18 6 47.38	2.5781	23 15 1.0	2.722	7	20 8 5.74	2.4400	22 26 21.0	4.530
8	18 9 22.05	2.5777	23 17 39.9	2.562	8	20 10 31.99	2.4351	22 21 45.2	4.663
9	18 11 56.69	2.5771	23 20 8.9	2.402	9	20 12 57.95	2.4302	22 17 1.4	4.796
10	18 14 31.29	2.5764	23 22 28.3	2.242	10	20 15 23.61	2.4252	22 12 9.7	4.927
11	18 17 5.85	2.5756	23 24 38.0	2.082	11	20 17 48.97	2.4202	22 7 10.1	5.057
12	18 19 40.36	2.5747	23 26 38.0	1.921	12	20 20 14.03	2.4151	22 2 2.8	5.185
13	18 22 14.82	2.5736	23 28 28.3	1.761	13	20 22 38.79	2.4100	21 56 47.8	5.313
14	18 24 49.21	2.5724	23 30 9.1	1.602	14	20 25 3.23	2.4048	21 51 25.2	5.439
15	18 27 23.53	2.5711	23 31 40.4	1.442	15	20 27 27.36	2.3996	21 45 55.1	5.565
16	18 29 57.77	2.5697	23 33 2.1	1.283	16	20 29 51.18	2.3943	21 40 17.5	5.689
17	18 32 31.92	2.5682	23 34 14.3	1.124	17	20 32 14.68	2.3890	21 34 32.4	5.813
18	18 35 5.97	2.5667	23 35 17.0	0.965	18	20 34 37.85	2.3837	21 28 39.9	5.935
19	18 37 39.92	2.5650	23 36 10.2	0.806	19	20 37 0.72	2.3783	21 22 40.1	6.057
20	18 40 13.76	2.5632	23 36 53.8	0.648	20	20 39 23.26	2.3729	21 16 33.1	6.176
21	18 42 47.49	2.5612	23 37 27.9	0.490	21	20 41 45.47	2.3675	21 10 19.0	6.295
22	18 45 21.10	2.5592	23 37 52.6	0.332	22	20 44 7.35	2.3620	21 3 57.8	6.413
23	18 47 54.59	2.5570	23 38 7.8	0.175	23	20 46 28.90	2.3565	20 57 29.5	6.530
24	18 50 27.95	2.5548	S. 23 38 13.6	0.018	24	20 48 50.12	2.3510	S. 20 50 54.3	6.645

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 48 50.12	2.3510	S. 20 50 54.3	6.645
1	20 51 11.01	2.3455	20 44 12.2	6.760
2	20 53 31.57	2.3400	20 37 23.2	6.873
3	20 55 51.80	2.3345	20 30 27.5	6.984
4	20 58 11.70	2.3289	20 23 25.2	7.094
5	21 0 31.26	2.3233	20 16 16.3	7.203
6	21 2 50.49	2.3177	20 9 0.9	7.311
7	21 5 9.38	2.3121	20 1 39.0	7.418
8	21 7 27.94	2.3064	19 54 10.7	7.524
9	21 9 46.16	2.3007	19 46 36.1	7.628
10	21 12 4.04	2.2951	19 38 55.3	7.731
11	21 14 21.58	2.2895	19 31 8.4	7.833
12	21 16 38.78	2.2839	19 23 15.5	7.934
13	21 18 55.65	2.2783	19 15 16.5	8.033
14	21 21 12.18	2.2727	19 7 11.5	8.132
15	21 23 28.37	2.2670	18 59 0.6	8.230
16	21 25 44.22	2.2614	18 50 43.9	8.327
17	21 27 59.73	2.2558	18 42 21.5	8.422
18	21 30 14.91	2.2502	18 33 53.4	8.516
19	21 32 29.75	2.2446	18 25 19.7	8.608
20	21 34 44.25	2.2390	18 16 40.4	8.700
21	21 36 58.42	2.2334	18 7 55.6	8.790
22	21 39 12.26	2.2279	17 59 5.5	8.879
23	21 41 25.77	2.2223	S. 17 50 10.1	8.967

FRIDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 43 38.95	2.2168	S. 17 41 9.4	9.063
1	21 45 51.79	2.2113	17 32 3.6	9.138
2	21 48 4.30	2.2058	17 22 52.7	9.222
3	21 50 16.48	2.2003	17 13 36.8	9.305
4	21 52 28.33	2.1949	17 4 16.0	9.387
5	21 54 39.86	2.1895	16 54 50.3	9.468
6	21 56 51.07	2.1841	16 45 19.8	9.548
7	21 59 1.96	2.1787	16 35 44.6	9.626
8	22 1 12.53	2.1734	16 26 4.7	9.703
9	22 3 22.78	2.1681	16 16 20.2	9.778
10	22 5 32.71	2.1628	16 6 31.2	9.852
11	22 7 42.32	2.1576	15 56 37.8	9.926
12	22 9 51.61	2.1524	15 46 40.0	9.998
13	22 12 0.59	2.1472	15 36 37.9	10.070
14	22 14 9.27	2.1420	15 26 31.6	10.140
15	22 16 17.64	2.1369	15 16 21.0	10.209
16	22 18 25.70	2.1318	15 6 6.3	10.277
17	22 20 33.46	2.1268	14 55 47.6	10.344
18	22 22 40.92	2.1218	14 45 24.9	10.410
19	22 24 48.08	2.1168	14 34 58.3	10.475
20	22 26 54.94	2.1119	14 24 27.9	10.538
21	22 29 1.51	2.1070	14 13 53.6	10.601
22	22 31 7.79	2.1022	14 3 15.7	10.662
23	22 33 13.77	2.0974	13 52 34.2	10.722
24	22 35 19.46	2.0926	S. 13 41 49.1	10.780

SATURDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 35 19.46	2.0926	S. 13 41 49.1	10.780
1	22 37 24.87	2.0879	13 31 0.4	10.838
2	22 39 30.00	2.0832	13 20 8.3	10.894
3	22 41 34.85	2.0786	13 9 12.9	10.950
4	22 43 39.43	2.0740	12 58 14.2	11.004
5	22 45 43.74	2.0694	12 47 12.3	11.057
6	22 47 47.78	2.0649	12 36 7.3	11.109
7	22 49 51.55	2.0605	12 24 59.2	11.160
8	22 51 55.05	2.0561	12 13 48.0	11.210
9	22 53 58.28	2.0518	12 2 33.8	11.260
10	22 56 1.25	2.0475	11 51 16.7	11.308
11	22 58 3.96	2.0432	11 39 56.8	11.355
12	23 0 6.42	2.0390	11 28 34.1	11.401
13	23 2 8.63	2.0349	11 17 8.6	11.446
14	23 4 10.60	2.0308	11 5 40.4	11.490
15	23 6 12.33	2.0268	10 54 9.6	11.533
16	23 8 13.81	2.0228	10 42 36.3	11.574
17	23 10 15.05	2.0188	10 31 0.6	11.615
18	23 12 16.05	2.0148	10 19 22.5	11.654
19	23 14 16.82	2.0110	10 7 42.1	11.633
20	23 16 17.36	2.0072	9 55 59.4	11.731
21	23 18 17.68	2.0035	9 44 14.5	11.768
22	23 20 17.78	1.9998	9 32 27.4	11.803
23	23 22 17.66	1.9962	S. 9 20 38.1	11.839

SUNDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 24 17.32	1.9926	S. 9 8 46.7	11.872
1	23 26 16.76	1.9891	8 56 53.3	11.905
2	23 28 15.99	1.9856	8 44 58.0	11.936
3	23 30 15.01	1.9822	8 33 0.9	11.967
4	23 32 13.83	1.9788	8 21 2.0	11.996
5	23 34 12.45	1.9755	8 9 1.3	12.025
6	23 36 10.88	1.9722	7 56 59.0	12.053
7	23 38 9.12	1.9690	7 44 55.0	12.080
8	23 40 7.17	1.9659	7 32 49.4	12.106
9	23 42 5.03	1.9628	7 20 42.2	12.132
10	23 44 2.71	1.9598	7 8 33.6	12.156
11	23 46 0.21	1.9568	6 56 23.6	12.178
12	23 47 57.53	1.9539	6 44 12.2	12.200
13	23 49 54.67	1.9510	6 31 59.5	12.222
14	23 51 51.64	1.9482	6 19 45.5	12.242
15	23 53 48.44	1.9454	6 7 30.3	12.262
16	23 55 45.08	1.9427	5 55 14.0	12.280
17	23 57 41.56	1.9401	5 42 53.7	12.297
18	23 59 37.89	1.9375	5 30 38.5	12.313
19	0 1 34.07	1.9350	5 18 19.3	12.328
20	0 3 30.10	1.9325	5 5 59.1	12.343
21	0 5 25.98	1.9301	4 53 38.0	12.357
22	0 7 21.71	1.9277	4 41 16.1	12.370
23	0 9 17.30	1.9254	4 28 53.5	12.383
24	0 11 12.75	1.9231	S. 4 16 30.2	12.394

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 31 3.08	2.1663	N.23 41 25.2	1.050
1	6 33 13.11	2.1677	23 42 24.8	0.937
2	6 35 23.22	2.1691	23 43 17.6	0.825
3	6 37 33.41	2.1704	23 44 3.6	0.712
4	6 39 43.68	2.1717	23 44 42.8	0.599
5	6 41 54.03	2.1730	23 45 15.2	0.485
6	6 44 4.45	2.1742	23 45 40.8	0.371
7	6 46 14.94	2.1754	23 45 59.6	0.257
8	6 48 25.50	2.1765	23 46 11.6	0.143
9	6 50 36.12	2.1776	23 46 16.8	+0.029
10	6 52 46.81	2.1787	23 46 15.1	−0.085
11	6 54 57.56	2.1797	23 46 6.6	0.200
12	6 57 8.37	2.1807	23 45 51.2	0.315
13	6 59 19.25	2.1817	23 45 28.9	0.430
14	7 1 30.19	2.1826	23 44 59.6	0.546
15	7 3 41.18	2.1835	23 44 23.4	0.661
16	7 5 52.22	2.1843	23 43 40.3	0.776
17	7 8 3.30	2.1851	23 42 50.3	0.892
18	7 10 14.43	2.1858	23 41 53.4	1.007
19	7 12 25.60	2.1865	23 40 49.6	1.122
20	7 14 36.81	2.1872	23 39 38.8	1.237
21	7 16 48.06	2.1879	23 38 21.1	1.353
22	7 18 59.35	2.1885	23 36 56.4	1.469
23	7 21 10.67	2.1890	N.23 35 24.8	1.585

WEDNESDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 23 22.02	2.1895	N.23 33 46.2	1.701
1	7 25 33.40	2.1900	23 32 0.7	1.817
2	7 27 44.80	2.1904	23 30 8.2	1.933
3	7 29 56.23	2.1908	23 28 8.8	2.049
4	7 32 7.69	2.1911	23 26 2.4	2.165
5	7 34 19.17	2.1915	23 23 49.0	2.281
6	7 36 30.67	2.1918	23 21 28.6	2.397
7	7 38 42.19	2.1921	23 19 1.3	2.513
8	7 40 53.73	2.1923	23 16 27.0	2.630
9	7 43 5.28	2.1924	23 13 45.7	2.746
10	7 45 16.84	2.1925	23 10 57.5	2.862
11	7 47 28.40	2.1926	23 8 2.3	2.978
12	7 49 39.96	2.1927	23 5 0.1	3.094
13	7 51 51.52	2.1928	23 1 51.0	3.210
14	7 54 3.08	2.1928	22 58 35.0	3.326
15	7 56 14.64	2.1928	22 55 12.0	3.441
16	7 58 26.20	2.1927	22 51 42.1	3.557
17	8 0 37.76	2.1926	22 48 5.3	3.672
18	8 2 49.31	2.1924	22 44 21.5	3.788
19	8 5 0.85	2.1922	22 40 30.8	3.903
20	8 7 12.38	2.1920	22 36 33.2	4.018
21	8 9 23.89	2.1918	22 32 28.7	4.133
22	8 11 35.39	2.1915	22 28 17.3	4.248
23	8 13 46.88	2.1912	22 23 59.0	4.363
24	8 15 58.36	2.1909	N.22 19 33.8	4.478

THURSDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 15 58.36	2.1909	N.22 19 33.8	4.478
1	8 18 9.81	2.1906	22 15 1.8	4.592
2	8 20 21.24	2.1902	22 10 23.0	4.706
3	8 22 32.64	2.1898	22 5 37.2	4.820
4	8 24 44.02	2.1893	22 0 44.6	4.934
5	8 26 55.37	2.1889	21 55 45.2	5.047
6	8 29 6.69	2.1884	21 50 39.0	5.160
7	8 31 17.98	2.1879	21 45 26.0	5.273
8	8 33 29.24	2.1874	21 40 6.2	5.386
9	8 35 40.47	2.1869	21 34 39.6	5.498
10	8 37 51.67	2.1863	21 29 6.3	5.611
11	8 40 2.83	2.1857	21 23 26.2	5.723
12	8 42 13.95	2.1851	21 17 39.4	5.835
13	8 44 25.04	2.1845	21 11 45.9	5.947
14	8 46 36.09	2.1838	21 5 45.7	6.058
15	8 48 47.10	2.1832	20 59 38.8	6.169
16	8 50 58.07	2.1825	20 53 25.3	6.280
17	8 53 9.00	2.1818	20 47 5.2	6.390
18	8 55 19.89	2.1811	20 40 38.5	6.500
19	8 57 30.73	2.1804	20 34 5.2	6.610
20	8 59 41.53	2.1796	20 27 25.3	6.720
21	9 1 52.28	2.1789	20 20 38.8	6.830
22	9 4 2.99	2.1781	20 13 45.7	6.939
23	9 6 13.65	2.1773	N.20 6 46.1	7.048

FRIDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 8 24.27	2.1765	N.19 59 40.0	7.156
1	9 10 34.84	2.1757	19 52 27.5	7.262
2	9 12 45.36	2.1749	19 45 8.6	7.370
3	9 14 55.83	2.1741	19 37 43.3	7.477
4	9 17 6.25	2.1733	19 30 11.5	7.584
5	9 19 16.62	2.1725	19 22 33.3	7.690
6	9 21 26.95	2.1717	19 14 48.7	7.796
7	9 23 37.23	2.1709	19 6 57.7	7.902
8	9 25 47.46	2.1700	18 59 0.4	8.006
9	9 27 57.64	2.1692	18 50 56.8	8.110
10	9 30 7.77	2.1683	18 42 47.0	8.214
11	9 32 17.85	2.1675	18 34 31.0	8.317
12	9 34 27.88	2.1667	18 26 8.9	8.420
13	9 36 37.86	2.1659	18 17 40.6	8.522
14	9 38 47.79	2.1651	18 9 6.1	8.624
15	9 40 57.67	2.1643	18 0 25.4	8.726
16	9 43 7.50	2.1635	17 51 38.6	8.827
17	9 45 17.29	2.1627	17 42 45.8	8.928
18	9 47 27.03	2.1619	17 33 47.1	9.028
19	9 49 36.72	2.1611	17 24 42.4	9.128
20	9 51 46.36	2.1603	17 15 31.7	9.227
21	9 53 55.95	2.1595	17 6 15.1	9.325
22	9 56 5.50	2.1588	16 56 52.6	9.423
23	9 58 15.00	2.1580	16 47 24.3	9.520
24	10 0 24.46	2.1573	N.16 37 50.2	9.617

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 29.					SUNDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 0 24.46	2.1573	N.16 37 50.2	9.617	0	10 52 1.08	2.1460	N.12 20 40.2	11.747
1	10 2 33.87	2.1565	16 28 10.3	9.713	1	10 54 9.84	2.1459	12 8 53.0	11.827
2	10 4 43.24	2.1558	16 18 24.6	9.809	2	10 56 18.59	2.1458	11 57 1.1	11.905
3	10 6 52.57	2.1551	16 8 33.2	9.904	3	10 58 27.34	2.1457	11 45 4.5	11.983
4	10 9 1.86	2.1545	15 58 36.1	9.998	4	11 0 36.08	2.1457	11 33 3.2	12.060
5	10 11 11.11	2.1538	15 48 33.4	10.092	5	11 2 44.81	2.1457	11 20 57.3	12.137
6	10 13 20.32	2.1532	15 38 25.1	10.185	6	11 4 53.55	2.1458	11 8 46.8	12.212
7	10 15 29.50	2.1526	15 28 11.2	10.278	7	11 7 2.30	2.1459	10 56 31.8	12.287
8	10 17 38.64	2.1520	15 17 51.7	10.371	8	11 9 11.06	2.1460	10 44 12.4	12.360
9	10 19 47.74	2.1514	15 7 26.7	10.463	9	11 11 19.83	2.1462	10 31 48.6	12.432
10	10 21 56.81	2.1508	14 56 56.2	10.554	10	11 13 28.61	2.1464	10 19 20.5	12.503
11	10 24 5.85	2.1503	14 46 20.2	10.644	11	11 15 37.40	2.1467	10 6 48.2	12.573
12	10 26 14.86	2.1498	14 35 38.8	10.733	12	11 17 46.21	2.1470	9 54 11.7	12.643
13	10 28 23.83	2.1493	14 24 52.2	10.821	13	11 19 55.04	2.1474	9 41 31.0	12.712
14	10 30 32.77	2.1489	14 14 0.3	10.908	14	11 22 3.89	2.1478	9 28 46.2	12.780
15	10 32 41.69	2.1485	14 3 3.2	10.995	15	11 24 12.77	2.1482	9 15 57.3	12.848
16	10 34 50.58	2.1481	13 52 0.9	11.081	16	11 26 21.68	2.1487	9 3 4.3	12.915
17	10 36 59.45	2.1477	13 40 53.5	11.166	17	11 28 30.62	2.1492	8 50 7.3	12.980
18	10 39 8.30	2.1473	13 29 41.0	11.251	18	11 30 39.59	2.1498	8 37 6.5	13.044
19	10 41 17.13	2.1470	13 18 23.4	11.335	19	11 32 48.60	2.1505	8 24 1.9	13.107
20	10 43 25.94	2.1467	13 7 0.7	11.419	20	11 34 57.65	2.1512	8 10 53.5	13.170
21	10 45 34.74	2.1465	12 55 32.9	11.503	21	11 37 6.74	2.1520	7 57 41.4	13.231
22	10 47 43.53	2.1463	12 44 0.2	11.585	22	11 39 15.87	2.1527	7 44 25.6	13.291
23	10 49 52.31	2.1461	12 32 22.6	11.667	23	11 41 25.05	2.1535	7 31 6.2	13.350
24	10 52 1.08	2.1460	N.12 20 40.2	11.747	24	11 43 34.29	2.1544	N. 7 17 43.3	13.408

PHASES OF THE MOON.

	d	h	m
○ Full Moon, ...	5	2	23.0
☾ Last Quarter, ...	11	17	51.7
● New Moon, ...	19	7	3.4
☽ First Quarter, ...	27	11	47.5

	d	h
☾ Perigee, ...	7	2.0
☾ Apogee, ...	22	19.7

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	126° 50′ 16″	3004	128° 20′ 24″	2988	129° 50′ 52″	2969	131° 21′ 44″	2952
	Venus	W.	99 45 14	3076	101 13 53	3056	102 42 56	3039	104 12 21	3018
	Aldebaran	W.	70 44 4	2644	72 21 59	2627	74 0 17	2610	75 38 59	2593
	Jupiter	W.	58 3 4	2685	59 40 4	2668	61 17 27	2652	62 55 12	2633
	Pollux	W.	26 53 1	2722	28 29 12	2695	30 5 58	2672	31 43 15	2648
	Mars	E.	36 9 21	2530	34 28 49	2515	32 47 56	2498	31 6 40	2482
	Spica	E.	64 1 0	2675	62 23 47	2660	60 46 14	2644	59 8 19	2626
2	Aldebaran	W.	83 58 31	2504	85 39 39	2489	87 21 10	2470	89 3 6	2452
	Jupiter	W.	71 10 2	2545	72 50 12	2527	74 30 47	2510	76 11 46	2492
	Pollux	W.	39 57 26	2540	41 37 44	2520	43 18 30	2500	44 59 43	2480
	Spica	E.	50 53 20	2551	49 13 17	2536	47 32 54	2522	45 52 11	2507
	Antares	E.	96 45 16	2527	95 4 41	2512	93 23 44	2494	91 42 22	2476
3	Aldebaran	W.	97 38 48	2368	99 23 8	2353	101 7 50	2338	102 52 54	2322
	Jupiter	W.	84 42 43	2409	86 26 5	2392	88 9 51	2378	89 53 58	2362
	Pollux	W.	53 32 29	2389	55 16 19	2373	57 0 33	2355	58 45 12	2339
	Spica	E.	37 24 6	2450	35 41 43	2443	33 59 9	2436	32 16 26	2431
	Antares	E.	83 9 29	2393	81 25 44	2378	79 41 37	2363	77 57 9	2347
	Saturn	E.	114 18 1	2372	112 33 46	2355	110 49 7	2339	109 4 4	2324
4	Jupiter	W.	98 40 2	2290	100 26 16	2277	102 12 50	2264	103 59 42	2251
	Pollux	W.	67 34 8	2264	69 21 0	2251	71 8 12	2238	72 55 43	2225
	Regulus	W.	31 37 44	2273	33 24 23	2258	35 11 25	2243	36 58 49	2229
	Antares	E.	69 9 30	2279	67 23 0	2267	65 36 12	2256	63 49 7	2245
	Saturn	E.	100 13 24	2252	98 26 14	2239	96 38 45	2226	94 50 56	2214
5	Pollux	W.	81 57 43	2172	83 46 53	2163	85 36 17	2155	87 25 53	2146
	Regulus	W.	46 0 40	2170	47 49 53	2160	49 39 21	2150	51 29 4	2143
	Mars	W.	20 47 51	2078	22 39 24	2068	24 31 13	2059	26 23 16	2050
	Antares	E.	54 49 58	2200	53 1 31	2194	51 12 54	2188	49 24 8	2183
	Saturn	E.	85 47 38	2161	83 58 12	2153	82 8 33	2143	80 18 40	2137
	α Aquilæ	E.	101 25 30	2869	99 52 32	2852	98 19 12	2837	96 45 32	2825
6	Pollux	W.	96 36 33	2118	98 27 4	2113	100 17 43	2111	102 8 26	2108
	Regulus	W.	60 40 22	2111	62 31 5	2107	64 21 54	2103	66 12 49	2100
	Mars	W.	35 46 29	2019	37 39 34	2014	39 32 46	2011	41 26 3	2009
	Antares	E.	40 19 2	2176	38 29 58	2178	36 40 57	2182	34 52 3	2187
	Saturn	E.	71 6 44	2107	69 15 55	2103	67 25 1	2101	65 34 3	2097
	α Aquilæ	E.	88 53 53	2788	87 19 10	2786	85 44 24	2786	84 9 38	2788
7	Regulus	W.	75 28 11	2095	77 19 18	2096	79 10 24	2097	81 1 28	2099
	Mars	W.	50 53 8	2005	52 46 34	2007	54 39 58	2008	56 33 20	2010
	Spica	W.	22 15 6	2294	24 1 15	2267	25 48 3	2247	27 35 21	2230
	Saturn	E.	56 18 22	2093	54 27 12	2094	52 36 3	2096	50 44 53	2098
	α Aquilæ	E.	76 17 20	2828	74 43 29	2842	73 9 56	2860	71 33 46	2879
	Fomalhaut	E.	108 40 31	2226	106 54 26	2223	105 8 16	2222	103 22 5	2220
8	Mars	W.	65 58 55	2030	67 51 42	2037	69 44 19	2042	71 36 48	2050
	Spica	W.	36 36 19	2194	38 24 56	2192	40 13 35	2193	42 2 13	2194
	Saturn	E.	41 30 36	2117	39 40 3	2123	37 49 39	2129	35 59 24	2136
	α Aquilæ	E.	63 58 5	3014	62 28 11	3052	60 59 2	3091	59 30 42	3136
	Fomalhaut	E.	94 31 10	2300	92 45 11	2304	90 59 18	2311	89 13 31	2317
	Sun	E.	139 47 25	2446	138 4 56	2450	136 22 32	2455	134 40 15	2459

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	132° 52′ 57″	2934	134° 24′ 33″	2917	135° 56′ 30″	2900	137° 28′ 49″	2883
	Venus	W.	105 42 11	2999	107 12 25	2980	108 43 3	2962	110 14 4	2943
	Aldebaran	W.	77 18 5	2574	78 57 35	2557	80 37 29	2539	82 17 48	2522
	Jupiter	W.	64 33 22	2615	66 11 57	2599	67 50 54	2580	69 30 17	2564
	Pollux	W.	33 21 5	2625	34 59 26	2604	36 38 16	2581	38 17 37	2561
	Mars	E.	29 25 2	2466	27 43 1	2452	26 0 40	2435	24 17 55	2420
	Spica	E.	57 30 2	2612	55 51 23	2597	54 12 24	2580	52 33 2	2566
2	Aldebaran	W.	90 45 27	2435	92 28 12	2418	94 11 21	2403	95 54 52	2385
	Jupiter	W.	77 53 10	2475	79 34 58	2458	81 17 10	2443	82 59 44	2425
	Pollux	W.	46 41 24	2462	48 23 31	2443	50 6 5	2424	51 49 5	2408
	Spica	E.	44 11 8	2494	42 29 47	2482	40 48 9	2471	39 6 15	2460
	Antares	E.	90 0 35	2459	88 18 24	2442	86 35 49	2425	84 52 50	2410
3	Aldebaran	W.	104 38 21	2307	106 24 10	2294	108 10 19	2278	109 56 51	2264
	Jupiter	W.	91 38 28	2346	93 23 20	2332	95 8 33	2317	96 54 8	2304
	Pollux	W.	60 30 14	2323	62 15 40	2309	64 1 27	2293	65 47 37	2279
	Spica	E.	30 33 35	2429	28 50 42	2429	27 7 49	2433	25 25 2	2443
	Antares	E.	76 12 18	2333	74 27 6	2318	72 41 33	2306	70 55 42	2291
	Saturn	E.	107 18 39	2309	105 32 52	2294	103 46 44	2279	102 0 14	2266
4	Jupiter	W.	105 46 53	2241	107 34 20	2230	109 22 3	2218	111 10 3	2207
	Pollux	W.	74 43 34	2214	76 31 41	2201	78 20 7	2192	80 8 47	2181
	Regulus	W.	38 46 33	2215	40 34 38	2203	42 23 1	2191	44 11 42	2180
	Antares	E.	62 1 46	2234	60 14 9	2225	58 26 18	2216	56 38 14	2208
	Saturn	E.	93 2 50	2202	91 14 26	2192	89 25 46	2181	87 36 50	2170
5	Pollux	W.	89 15 42	2140	91 5 40	2132	92 55 50	2127	94 46 8	2122
	Regulus	W.	53 18 58	2135	55 9 4	2128	56 59 21	2121	58 49 48	2116
	Mars	W.	28 15 33	2042	30 8 2	2035	32 0 42	2028	33 53 32	2024
	Antares	E.	47 35 15	2180	45 46 17	2176	43 57 13	2175	42 8 8	2174
	Saturn	E.	78 28 37	2129	76 38 22	2123	74 47 58	2117	72 57 25	2112
	α Aquilæ	E.	95 11 36	2814	93 37 26	2805	92 3 4	2797	90 28 32	2792
6	Pollux	W.	103 59 13	2107	105 50 2	2105	107 40 53	2105	109 31 45	2105
	Regulus	W.	68 3 48	2098	69 54 51	2096	71 45 57	2095	73 37 4	2095
	Mars	W.	43 19 24	2007	45 12 47	2005	47 6 13	2004	48 59 41	2005
	Antares	E.	33 3 16	2196	31 14 43	2207	29 26 26	2220	27 38 29	2237
	Saturn	E.	63 42 59	2095	61 51 52	2094	60 0 43	2092	58 9 32	2093
	α Aquilæ	E.	82 34 55	2792	81 0 16	2798	79 25 46	2806	77 51 26	2817
7	Regulus	W.	82 52 28	2101	84 43 25	2105	86 34 16	2109	88 25 2	2113
	Mars	W.	58 26 38	2014	60 19 51	2017	62 12 59	2021	64 6 1	2026
	Spica	W.	29 23 4	2217	31 11 6	2208	32 59 22	2201	34 47 48	2198
	Saturn	E.	48 53 55	2101	47 2 57	2103	45 12 3	2109	43 21 17	2112
	α Aquilæ	E.	70 4 0	2901	68 31 42	2924	66 59 54	2952	65 28 41	2981
	Fomalhaut	E.	101 35 51	2290	99 49 37	2291	98 3 24	2294	96 17 16	2296
8	Mars	W.	73 29 5	2056	75 21 12	2064	77 13 7	2071	79 4 51	2079
	Spica	W.	43 50 49	2196	45 39 22	2200	47 27 49	2204	49 16 11	2209
	Saturn	E.	34 9 19	2142	32 19 24	2150	30 29 41	2158	28 40 10	2166
	α Aquilæ	E.	58 3 16	3184	56 36 48	3237	55 11 23	3294	53 47 5	3359
	Fomalhaut	E.	87 27 59	2324	85 42 35	2332	83 57 22	2341	82 12 22	2350
	Sun	E.	132 58 4	2464	131 16 0	2470	129 34 5	2477	127 52 20	2485

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	Mars	W.	80° 56′ 22″	2088	82° 47′ 40″	2097	84° 38′ 44″	2106	86° 29′ 34″	2116
	Spica	W.	51 4 25	2215	52 52 30	2221	54 40 26	2228	56 28 12	2236
	α Aquilæ	E.	52 24 2	3429	51 2 18	3505	49 41 59	3589	48 23 13	3682
	Fomalhaut	E.	80 27 36	2361	78 43 5	2372	76 58 50	2384	75 14 52	2397
	Sun	E.	126 10 45	2492	124 29 21	2501	122 48 9	2510	121 7 9	2518
10	Mars	W.	95 39 54	2168	97 29 10	2179	99 18 9	2190	101 6 51	2202
	Spica	W.	65 23 58	2279	67 10 28	2290	68 56 42	2300	70 42 42	2310
	Antares	W.	20 5 7	2491	21 46 33	2466	23 28 34	2448	25 11 0	2436
	Fomalhaut	E.	66 39 59	2472	64 58 6	2490	63 16 39	2508	61 35 37	2526
	α Pegasi	E.	84 24 55	2653	82 47 12	2667	81 9 48	2682	79 32 44	2696
	Sun	E.	112 45 30	2570	111 5 54	2581	109 26 33	2592	107 47 27	2604
11	Spica	W.	79 28 48	2365	81 13 13	2377	82 57 21	2389	84 41 12	2401
	Antares	W.	33 45 31	2427	35 28 27	2432	37 11 16	2438	38 53 57	2443
	Fomalhaut	E.	53 17 42	2643	51 39 45	2669	50 2 24	2699	48 25 43	2730
	α Pegasi	E.	71 33 9	2793	69 58 32	2815	68 24 24	2838	66 50 46	2862
	Sun	E.	99 36 3	2665	97 58 36	2678	96 21 26	2690	94 44 33	2702
12	Spica	W.	93 16 17	2460	94 58 27	2472	96 40 20	2483	98 21 57	2495
	Antares	W.	47 24 59	2482	49 6 37	2492	50 48 1	2501	52 29 13	2511
	Fomalhaut	E.	40 33 24	2924	39 1 35	2973	37 30 48	3028	36 1 10	3090
	α Pegasi	E.	59 11 3	3008	57 41 0	3043	56 11 40	3078	54 43 4	3118
	Sun	E.	86 44 19	2766	85 9 7	2779	83 34 12	2792	81 59 33	2805
13	Antares	W.	60 51 48	2560	62 31 38	2570	64 11 14	2580	65 50 36	2591
	Saturn	W.	29 18 24	2529	30 58 57	2540	32 39 14	2551	34 19 17	2561
	α Pegasi	E.	47 32 53	3358	46 9 48	3416	44 47 50	3481	43 27 5	3553
	Sun	E.	74 10 26	2867	72 37 25	2880	71 4 40	2891	69 32 10	2905
14	Antares	W.	74 3 58	2640	75 41 58	2651	77 19 44	2660	78 57 18	2670
	Saturn	W.	42 35 54	2613	44 14 31	2624	45 52 54	2634	47 31 3	2643
	α Pegasi	E.	37 5 12	4033	35 54 4	4161	34 45 1	4308	33 38 16	4472
	Sun	E.	61 53 35	2964	60 22 37	2976	58 51 54	2986	57 21 24	2999
15	Antares	W.	87 1 48	2719	88 38 3	2728	90 14 6	2736	91 49 58	2746
	Saturn	W.	55 38 30	2692	57 15 21	2701	58 51 59	2710	60 28 25	2719
	α Aquilæ	W.	47 51 47	4134	49 1 16	4073	50 11 44	4018	51 23 6	3969
	Sun	E.	49 52 34	3056	48 23 30	3067	46 54 40	3078	45 26 4	3090
16	Saturn	W.	68 27 37	2763	70 2 53	2772	71 37 57	2781	73 12 50	2788
	α Aquilæ	W.	57 30 38	3790	58 45 51	3765	60 1 30	3742	61 17 33	3721
	Sun	E.	38 6 31	3148	36 39 19	3158	35 12 19	3172	33 45 36	3183
21	Sun	W.	19 11 56	3523	20 31 55	3515	21 52 2	3509	23 12 16	3504
	Pollux	E.	62 19 55	3056	60 50 51	3060	59 21 53	3065	57 53 1	3070
	Regulus	E.	98 13 51	3039	96 44 26	3045	95 15 9	3053	93 46 0	3057
22	Sun	W.	29 54 38	3486	31 15 15	3488	32 35 52	3488	33 56 30	3486
	Pollux	E.	50 30 4	3091	49 1 44	3096	47 33 29	3100	46 5 19	3103
	Regulus	E.	86 21 33	3073	84 52 50	3075	83 24 10	3077	81 55 32	3080
	Mars	E.	107 52 29	3030	106 22 53	3033	104 53 21	3036	103 23 53	3039
23	Sun	W.	40 39 57	3482	42 0 41	3480	43 21 27	3480	44 42 14	3477
	Pollux	E.	38 45 33	3120	37 17 48	3124	35 50 8	3127	34 22 31	3131

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L of Diff.	XXIh.	P. L. of Diff.
9	Mars	W.	88° 20′ 9″	2126	90° 10′ 28″	2136	92° 0′ 33″	2146	93° 50′ 22″	2157
	Spica	W.	58 15 46	2243	60 3 9	2253	61 50 18	2261	63 37 15	2270
	α Aquilæ	E.	47 6 7	3783	45 50 47	3896	44 37 23	4020	43 26 3	4157
	Fomalhaut	E.	73 31 13	2410	71 47 53	2424	70 4 53	2439	68 22 14	2456
	Sun	E.	119 26 21	2528	117 45 47	2538	116 5 27	2548	114 25 21	2559
10	Mars	W.	102 55 16	2214	104 43 23	2225	106 31 13	2237	108 18 45	2249
	Spica	W.	72 28 27	2321	74 13 56	2331	75 59 10	2343	77 44 7	2354
	Antares	W.	26 53 43	2420	28 36 36	2425	30 19 35	2425	32 2 34	2426
	Fomalhaut	E.	59 55 3	2548	58 14 56	2570	56 35 20	2592	54 56 14	2617
	α Pegasi	E.	77 56 1	2715	76 19 41	2732	74 43 44	2752	73 8 13	2772
	Sun	E.	106 8 38	2615	104 30 4	2628	102 51 47	2640	101 13 47	2652
11	Spica	W.	86 24 47	2412	88 8 5	2424	89 51 6	2436	91 33 50	2448
	Antares	W.	40 36 31	2450	42 18 54	2458	44 1 7	2465	45 43 9	2474
	Fomalhaut	E.	46 49 42	2762	45 14 24	2798	43 39 53	2835	42 6 11	2878
	α Pegasi	E.	65 17 39	2889	63 45 6	2916	62 13 8	2945	60 41 46	2976
	Sun	E.	93 7 56	2715	91 31 36	2729	89 55 34	2741	88 19 48	2753
12	Spica	W.	100 3 17	2508	101 44 19	2520	103 25 5	2532	105 5 34	2543
	Antares	W.	54 10 11	2520	55 50 56	2530	57 31 27	2540	59 11 45	2551
	Fomalhaut	E.	34 32 48	3158	33 5 48	3233	31 40 18	3321	30 16 31	3421
	α Pegasi	E.	53 15 16	3159	51 48 18	3203	50 22 12	3251	48 57 3	3301
	Sun	E.	80 25 11	2818	78 51 6	2829	77 17 16	2842	75 43 42	2855
13	Antares	W.	67 29 44	2601	69 8 38	2611	70 47 18	2621	72 25 45	2631
	Saturn	W.	35 59 6	2572	37 38 39	2582	39 17 59	2593	40 57 4	2604
	α Pegasi	E.	42 7 39	3631	40 49 38	3716	39 33 8	3810	38 18 16	3916
	Sun	E.	67 59 57	2916	66 27 58	2929	64 56 16	2940	63 24 48	2952
14	Antares	W.	80 34 38	2681	82 11 44	2689	83 48 38	2699	85 25 19	2708
	Saturn	W.	49 8 59	2654	50 46 41	2663	52 24 10	2673	54 1 26	2682
	α Pegasi	E.	32 33 59	4659	31 32 25	4871	30 33 47	5116	29 38 22	5398
	Sun	E.	55 51 10	3009	54 21 9	3022	52 51 23	3034	51 21 52	3044
15	Antares	W.	93 25 37	2756	95 1 3	2765	96 36 17	2773	98 11 20	2782
	Saturn	W.	62 4 39	2729	63 40 41	2738	65 16 31	2747	66 52 9	2754
	α Aquilæ	W.	52 35 16	3925	53 48 10	3886	55 1 44	3850	56 15 55	3819
	Sun	E.	43 57 42	3101	42 29 34	3112	41 1 39	3124	39 33 58	3135
16	Saturn	W.	74 47 33	2798	76 22 4	2805	77 56 25	2813	79 30 36	2821
	α Aquilæ	W.	62 33 58	3703	63 50 42	3687	65 7 43	3673	66 24 59	3661
	Sun	E.	32 19 7	3196	30 52 53	3210	29 26 56	3223	28 1 14	3237
21	Sun	W.	24 32 36	3496	25 53 2	3495	27 13 32	3493	28 34 4	3491
	Pollux	E.	56 24 15	3074	54 55 34	3079	53 26 59	3083	51 58 29	3087
	Regulus	E.	92 16 58	3061	90 48 1	3065	89 19 8	3068	87 50 19	3070
22	Sun	W.	35 17 10	3486	36 37 50	3486	37 58 31	3484	39 19 13	3482
	Pollux	E.	44 37 13	3107	43 9 12	3110	41 41 15	3114	40 13 22	3117
	Regulus	E.	80 26 58	3082	78 58 26	3083	77 29 56	3084	76 1 27	3086
	Mars	E.	101 54 28	3040	100 25 5	3043	98 55 46	3045	97 26 29	3047
23	Sun	W.	46 3 4	3476	47 23 55	3473	48 44 49	3471	50 5 46	3469
	Pollux	E.	32 54 59	3135	31 27 32	3139	30 0 10	3143	28 32 53	3149

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Regulus	E.	74° 33′ 0″	3067	73° 4′ 35″	3087	71° 36′ 10″	3087	70° 7′ 45″	3067
	Mars	E.	95 57 14	3048	94 28 1	3049	92 58 49	3049	91 29 37	3050
24	Sun	W.	51 26 45	3464	52 47 49	3463	54 8 55	3457	55 30 7	3454
	Venus	W.	19 6 24	3607	20 24 51	3595	21 43 31	3584	23 2 23	3576
	Aldebaran	W.	17 56 35	3144	19 23 51	3132	20 51 22	3120	22 19 7	3111
	Regulus	E.	62 45 33	3082	61 17 2	3080	59 48 28	3078	58 19 52	3075
	Mars	E.	84 3 39	3047	82 34 24	3045	81 5 7	3043	79 35 47	3041
25	Sun	W.	62 17 21	3427	63 39 7	3421	65 1 0	3413	66 23 2	3407
	Aldebaran	W.	29 40 32	3069	31 9 19	3061	32 38 16	3053	34 7 23	3046
	Venus	W.	29 39 5	3533	30 58 53	3524	32 18 51	3515	33 38 59	3506
	Regulus	E.	50 55 51	3056	49 26 48	3052	47 57 39	3047	46 28 24	3040
	Mars	E.	72 8 15	3022	70 38 30	3018	69 8 40	3013	67 38 43	3007
	Spica	E.	104 56 48	3074	103 28 7	3068	101 59 18	3063	100 30 21	3058
26	Sun	W.	73 15 23	3363	74 38 22	3351	76 1 34	3343	77 24 56	3331
	Aldebaran	W.	41 35 34	3001	43 5 46	2990	44 36 11	2980	46 6 49	2969
	Venus	W.	40 22 18	3456	41 43 31	3445	43 4 57	3433	44 26 36	3421
	Jupiter	W.	24 40 45	3053	26 9 52	3043	27 39 11	3033	29 8 43	3024
	Regulus	E.	39 0 16	3009	37 30 14	3001	36 0 3	2993	34 29 42	2986
	Mars	E.	60 7 3	2973	58 36 16	2965	57 5 20	2956	55 34 12	2948
	Spica	E.	93 3 22	3015	91 33 28	3006	90 3 23	2996	88 33 5	2988
27	Sun	W.	84 25 11	3270	85 49 58	3256	87 15 1	3242	88 40 20	3228
	Aldebaran	W.	53 43 26	2912	55 15 30	2898	56 47 51	2885	58 20 29	2872
	Venus	W.	51 18 22	3357	52 41 28	3342	54 4 51	3327	55 28 31	3312
	Jupiter	W.	36 39 35	2967	38 10 29	2955	39 41 38	2942	41 13 4	2928
	Mars	E.	47 55 37	2898	46 23 15	2886	44 50 38	2875	43 17 47	2863
	Spica	E.	80 58 28	2933	79 26 51	2920	77 54 58	2908	76 22 49	2894
28	Sun	W.	95 51 21	3150	97 18 30	3133	98 46 0	3117	100 13 49	3099
	Aldebaran	W.	66 8 7	2799	67 42 36	2783	69 17 26	2766	70 52 36	2751
	Venus	W.	62 31 24	3231	63 56 57	3214	65 22 50	3196	66 49 4	3178
	Jupiter	W.	48 54 37	2855	50 27 53	2841	52 1 28	2824	53 35 25	2808
	Pollux	W.	22 19 12	2899	23 51 32	2872	25 24 27	2845	26 57 57	2821
	Mars	E.	35 29 36	2800	33 55 8	2787	32 20 23	2774	30 45 21	2760
	Spica	E.	68 37 52	2827	67 3 59	2812	65 29 47	2797	63 55 15	2784
29	Sun	W.	107 38 24	3008	109 8 27	2989	110 38 54	2970	112 9 44	2950
	Aldebaran	W.	78 53 56	2666	80 31 21	2649	82 9 9	2630	83 47 23	2613
	Venus	W.	74 5 45	3083	75 34 15	3064	77 3 9	3044	78 32 27	3024
	Jupiter	W.	61 30 31	2722	63 6 42	2707	64 43 13	2687	66 20 11	2669
	Pollux	W.	34 53 8	2707	36 29 39	2687	38 6 37	2665	39 44 4	2644
	Spica	E.	55 57 41	2705	54 21 8	2689	52 44 14	2674	51 6 59	2659
	Antares	E.	101 50 35	2689	100 13 41	2672	98 36 23	2652	96 58 39	2635
30	Sun	W.	119 50 6	2852	121 23 27	2832	122 57 13	2813	124 31 24	2793
	Aldebaran	W.	92 4 42	2520	93 45 27	2502	95 26 38	2482	97 8 16	2465
	Venus	W.	86 5 15	2921	87 37 7	2901	89 9 24	2881	90 42 7	2859
	Jupiter	W.	74 31 12	2574	76 10 42	2556	77 50 37	2538	79 30 58	2518
	Pollux	W.	47 58 19	2542	49 38 34	2522	51 19 16	2502	53 0 27	2482
	Spica	E.	42 55 34	2583	41 16 15	2563	39 36 38	2556	37 56 43	2544
	Antares	E.	88 43 51	2543	87 3 37	2523	85 22 56	2505	83 41 50	2487
	Saturn	E.	119 58 56	2509	118 17 55	2489	116 36 27	2471	114 54 33	2453

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	Regulus	E.	68° 39′ 20″	3087	67° 10′ 55″	3087	65° 42′ 29″	3085	64° 14′ 1″	3085
	Mars	E.	90 0 26	3050	88 31 15	3050	87 2 4	3049	85 32 52	3048
24	Sun	W.	56 51 22	3449	58 12 43	3444	59 34 10	3439	60 55 42	3433
	Venus	W.	24 21 24	3566	25 40 35	3558	26 59 55	3548	28 19 26	3541
	Aldebaran	W.	23 47 3	3102	25 15 10	3094	26 43 27	3085	28 11 55	3076
	Regulus	E.	56 51 12	3072	55 22 28	3069	53 53 41	3065	52 24 48	3061
	Mars	E.	78 6 25	3038	76 36 59	3034	75 7 29	3030	73 37 54	3027
25	Sun	W.	67 45 11	3399	69 7 29	3390	70 29 57	3381	71 52 35	3372
	Aldebaran	W.	35 36 39	3037	37 6 6	3028	38 35 44	3019	40 5 33	3009
	Venus	W.	34 59 17	3496	36 19 46	3487	37 40 25	3476	39 1 16	3466
	Regulus	E.	44 59 1	3035	43 29 32	3029	41 59 55	3022	40 30 10	3015
	Mars	E.	66 8 39	3001	64 38 27	2995	63 8 8	2988	61 37 40	2981
	Spica	E.	99 1 15	3047	97 32 1	3040	96 2 38	3032	94 33 5	3024
26	Sun	W.	78 48 32	3320	80 12 20	3308	81 36 22	3294	83 0 40	3283
	Aldebaran	W.	47 37 40	2958	49 8 45	2948	50 40 3	2935	52 11 37	2924
	Venus	W.	45 48 29	3409	47 10 35	3397	48 32 55	3383	49 55 31	3370
	Jupiter	W.	30 38 26	3014	32 8 22	3002	33 38 32	2991	35 8 56	2979
	Regulus	E.	32 59 12	2978	31 28 32	2971	29 57 43	2964	28 26 45	2956
	Mars	E.	54 2 54	2938	52 31 23	2929	50 59 41	2919	49 27 46	2908
	Spica	E.	87 2 37	2977	85 31 55	2966	84 1 0	2955	82 29 51	2944
27	Sun	W.	90 5 56	3213	91 31 50	3198	92 58 2	3183	94 24 31	3168
	Aldebaran	W.	59 53 24	2858	61 26 37	2844	63 0 8	2829	64 33 58	2815
	Venus	W.	56 52 29	3297	58 16 44	3281	59 41 18	3265	61 6 11	3247
	Jupiter	W.	42 44 47	2915	44 16 47	2901	45 49 5	2886	47 21 42	2872
	Mars	E.	41 44 41	2851	40 11 19	2838	38 37 41	2827	37 3 48	2812
	Spica	E.	74 50 23	2882	73 17 41	2868	71 44 41	2855	70 11 25	2842
28	Sun	W.	101 42 0	3081	103 10 33	3063	104 39 28	3046	106 8 44	3029
	Aldebaran	W.	72 28 8	2736	74 4 0	2718	75 40 16	2701	77 16 54	2684
	Venus	W.	68 15 40	3159	69 42 38	3142	71 9 57	3122	72 37 40	3104
	Jupiter	W.	55 9 42	2792	56 44 21	2775	58 19 21	2757	59 54 45	2741
	Pollux	W.	28 31 58	2796	30 6 31	2773	31 41 34	2750	33 17 7	2730
	Mars	E.	29 10 1	2747	27 34 24	2734	25 58 29	2722	24 22 18	2710
	Spica	E.	62 20 26	2767	60 45 15	2752	59 9 44	2737	57 33 53	2721
29	Sun	W.	113 40 59	2931	115 12 38	2911	116 44 43	2892	118 17 12	2873
	Aldebaran	W.	85 26 0	2594	87 5 3	2577	88 44 30	2558	90 24 23	2539
	Venus	W.	80 2 10	3003	81 32 19	2985	83 2 51	2963	84 33 50	2942
	Jupiter	W.	67 57 33	2651	69 35 19	2631	71 13 32	2613	72 52 9	2594
	Pollux	W.	41 21 59	2623	43 0 23	2604	44 39 13	2582	46 18 33	2563
	Spica	E.	49 29 24	2613	47 51 28	2628	46 13 11	2612	44 34 33	2597
	Antares	E.	95 20 32	2617	93 42 0	2599	92 3 3	2580	90 23 40	2561
30	Sun	W.	126 6 1	2772	127 41 5	2754	129 16 33	2734	130 52 28	2714
	Aldebaran	W.	98 50 19	2445	100 32 49	2427	102 15 45	2408	103 59 9	2389
	Venus	W.	92 15 18	2839	93 48 55	2818	95 22 59	2798	96 57 30	2778
	Jupiter	W.	81 11 46	2500	82 52 59	2480	84 34 41	2462	86 16 48	2442
	Pollux	W.	54 42 5	2462	56 24 12	2443	58 6 46	2422	59 49 49	2404
	Spica	E.	36 16 31	2532	34 36 2	2522	32 55 20	2512	31 14 23	2505
	Antares	E.	82 0 18	2467	80 18 19	2450	78 35 55	2431	76 53 4	2413
	Saturn	E.	113 12 13	2433	111 29 25	2415	109 46 12	2396	108 2 32	2378

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semidiameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semidiameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Mon.	1	2 32 52.25	9.532	N.15 1 33.3	+45.47	15 54.26	66.04	3 0.76	0.323
Tues.	2	2 36 41.30	9.554	15 19 37.0	44.84	15 54.03	66.12	3 8.25	0.301
Wed.	3	2 40 30.90	9.577	15 37 25.5	44.21	15 53.80	66.20	3 15.20	0.278
Thur.	4	2 44 21.04	9.600	15 54 58.6	43.55	15 53.57	66.28	3 21.59	0.255
Frid.	5	2 48 11.73	9.624	16 12 15.9	42.89	15 53.34	66.36	3 27.43	0.231
Sat.	6	2 52 2.99	9.648	16 29 17.1	42.21	15 53.12	66.44	3 32.71	0.207
Sun.	7	2 55 54.83	9.672	16 46 1.9	41.52	15 52.89	66.52	3 37.41	0.183
Mon.	8	2 59 47.25	9.697	17 2 30.0	40.82	15 52.67	66.61	3 41.54	0.159
Tues.	9	3 3 40.24	9.721	17 18 41.2	40.12	15 52.44	66.69	3 45.09	0.135
Wed.	10	3 7 33.83	9.746	17 34 35.2	39.39	15 52.22	66.78	3 48.05	0.110
Thur.	11	3 11 28.02	9.770	17 50 11.8	38.65	15 52.01	66.86	3 50.41	0.086
Frid.	12	3 15 22.81	9.795	18 5 30.5	37.90	15 51.80	66.94	3 52.18	0.061
Sat.	13	3 19 18.18	9.820	18 20 31.1	37.14	15 51.59	67.02	3 53.36	0.037
Sun.	14	3 23 14.15	9.844	18 35 13.3	36.37	15 51.38	67.10	3 53.94	0.012
Mon.	15	3 27 10.71	9.868	18 49 36.8	35.59	15 51.18	67.18	3 53.94	0.012
Tues.	16	3 31 7.86	9.893	19 3 41.5	34.80	15 50.98	67.26	3 53.35	0.037
Wed.	17	3 35 5.60	9.917	19 17 26.9	33.99	15 50.79	67.34	3 52.17	0.061
Thur.	18	3 39 3.90	9.941	19 30 52.7	33.16	15 50.60	67.42	3 50.42	0.085
Frid.	19	3 43 2.76	9.964	19 43 58.7	32.33	15 50.41	67.50	3 48.12	0.108
Sat.	20	3 47 2.18	9.987	19 56 44.6	31.48	15 50.23	67.58	3 45.27	0.131
Sun.	21	3 51 2.15	10.009	20 9 10.0	30.64	15 50.06	67.66	3 41.87	0.154
Mon.	22	3 55 2.66	10.032	20 21 14.9	29.77	15 49.89	67.73	3 37.94	0.176
Tues.	23	3 59 3.68	10.053	20 32 59.0	28.89	15 49.71	67.82	3 33.48	0.197
Wed.	24	4 3 5.21	10.074	20 44 21.9	28.00	15 49.55	67.89	3 28.51	0.218
Thur.	25	4 7 7.24	10.094	20 55 23.3	27.10	15 49.39	67.96	3 23.05	0.238
Frid.	26	4 11 9.75	10.115	21 6 2.9	26.19	15 49.24	68.03	3 17.12	0.258
Sat.	27	4 15 12.73	10.134	21 16 20.7	25.28	15 49.09	68.10	3 10.73	0.277
Sun.	28	4 19 16.16	10.153	21 26 16.5	24.36	15 48.94	68.16	3 3.88	0.296
Mon.	29	4 23 20.04	10.171	21 35 50.1	23.42	15 48.79	68.23	2 56.57	0.314
Tues.	30	4 27 24.37	10.189	21 45 1.1	22.48	15 48.65	68.29	2 48.82	0.332
Wed.	31	4 31 29.13	10.206	21 53 49.4	21.54	15 48.51	68.35	2 40.64	0.350
Thur.	32	4 35 34.30	10.224	N.22 2 14.8	+20.58	15 48.38	68.41	2 32.05	0.367

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time, or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Mon.	1	2 32 52.73	9.533	N.15 1 35.6	+45.47	3 0.78	0.323	2 35 53.51
Tues.	2	2 36 41.80	9.555	15 19 39.4	44.84	3 8.27	0.301	2 39 50.07
Wed.	3	2 40 31.42	9.578	15 37 28.0	44.21	3 15.21	0.278	2 43 46.63
Thur.	4	2 44 21.58	9.601	15 55 1.1	43.55	3 21.60	0.255	2 47 43.18
Frid.	5	2 48 12.29	9.625	16 12 18.4	42.89	3 27.44	0.231	2 51 39.73
Sat.	6	2 52 3.57	9.649	16 29 19.6	42.21	3 32.72	0.207	2 55 36.29
Sun.	7	2 55 55.42	9.673	16 46 4.4	41.52	3 37.42	0.183	2 59 32.84
Mon.	8	2 59 47.85	9.697	17 2 32.5	40.82	3 41.55	0.159	3 3 29.40
Tues.	9	3 3 40.85	9.721	17 18 43.7	40.12	3 45.10	0.135	3 7 25.95
Wed.	10	3 7 34.45	9.746	17 34 37.7	39.39	3 48.06	0.110	3 11 22.51
Thur.	11	3 11 28.65	9.770	17 50 14.3	38.65	3 50.42	0.086	3 15 19.07
Frid.	12	3 15 23.44	9.795	18 5 33.0	37.90	3 52.18	0.061	3 19 15.62
Sat.	13	3 19 18.82	9.819	18 20 33.5	37.14	3 53.36	0.037	3 23 12.18
Sun.	14	3 23 14.79	9.844	18 35 15.6	36.37	3 53.94	0.012	3 27 8.73
Mon.	15	3 27 11.35	9.868	18 49 39.1	35.59	3 53.94	0.012	3 31 5.29
Tues.	16	3 31 8.50	9.893	19 3 43.7	34.80	3 53.35	0.037	3 35 1.85
Wed.	17	3 35 6.24	9.917	19 17 29.0	33.99	3 52.17	0.061	3 38 58.41
Thur.	18	3 39 4.54	9.941	19 30 54.7	33.16	3 50.42	0.085	3 42 54.96
Frid.	19	3 43 3.40	9.964	19 44 0.7	32.33	3 48.11	0.108	3 46 51.51
Sat.	20	3 47 2.81	9.987	19 56 46.5	31.48	3 45.26	0.131	3 50 48.07
Sun.	21	3 51 2.77	10.009	20 9 11.9	30.64	3 41.86	0.154	3 54 44.63
Mon.	22	3 55 3.26	10.032	20 21 16.7	29.77	3 37.93	0.176	3 58 41.19
Tues.	23	3 59 4.27	10.053	20 33 0.7	28.89	3 33.47	0.197	4 2 37.74
Wed.	24	4 3 5.79	10.074	20 44 23.5	28.00	3 28.51	0.218	4 6 34.30
Thur.	25	4 7 7.81	10.094	20 55 24.8	27.10	3 23.04	0.238	4 10 30.85
Frid.	26	4 11 10.30	10.114	21 6 4.3	26.19	3 17.11	0.258	4 14 27.41
Sat.	27	4 15 13.26	10.133	21 16 22.0	25.28	3 10.71	0.277	4 18 23.97
Sun.	28	4 19 16.67	10.152	21 26 17.7	24.36	3 3.86	0.296	4 22 20.53
Mon.	29	4 23 20.53	10.170	21 35 51.2	23.42	2 56.55	0.314	4 26 17.08
Tues.	30	4 27 24.84	10.188	21 45 2.1	22.48	2 48.80	0.332	4 30 13.64
Wed.	31	4 31 29.58	10.205	21 53 50.3	21.54	2 40.62	0.350	4 34 10.20
Thur.	32	4 35 34.72	10.223	N.22 2 15.7	+21.58	2 32.04	0.367	4 38 6.76

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour +9ˢ.8565

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	121	40 38 55.8	38 57.7	145.41	+0.61	0.0035071	44.0	21 20 36.11
2	122	41 37 4.7	37 6.5	145.33	0.60	.0036124	43.7	21 16 40.20
3	123	42 35 11.7	35 13.4	145.25	0.56	.0037170	43.5	21 12 44.29
4	124	43 33 17.0	33 18.5	145.18	0.49	.0038211	43.2	21 8 48.39
5	125	44 31 20.7	31 22.0	145.11	0.40	.0039247	43.0	21 4 52.48
6	126	45 29 22.7	29 23.9	145.05	0.30	.0040277	42.7	21 0 56.57
7	127	46 27 23.1	27 24.2	144.99	0.18	.0041300	42.4	20 57 0.66
8	128	47 25 22.0	25 23.0	144.93	+0.05	.0042317	42.1	20 53 4.75
9	129	48 23 19.6	23 20.4	144.87	−0.09	.0043326	41.7	20 49 8.84
10	130	49 21 16.0	21 16.6	144.82	0.22	.0044325	41.3	20 45 12.93
11	131	50 19 11.1	19 11.6	144.77	0.33	.0045313	40.8	20 41 17.02
12	132	51 17 4.9	17 5.3	144.72	0.42	.0046287	40.2	20 37 21.11
13	133	52 14 57.5	14 57.8	144.66	0.48	.0047247	39.6	20 33 25.20
14	134	53 12 48.9	12 49.0	144.61	0.52	.0048192	39.0	20 29 29.29
15	135	54 10 39.1	10 39.0	144.56	0.53	.0049120	38.3	20 25 33.38
16	136	55 8 28.0	8 27.8	144.51	0.51	.0050029	37.5	20 21 37.46
17	137	56 6 15.7	6 15.4	144.46	0.46	.0050919	36.7	20 17 41.55
18	138	57 4 2.2	4 1.7	144.41	0.38	.0051788	35.8	20 13 45.64
19	139	58 1 47.4	1 46.7	144.35	0.27	.0052636	34.9	20 9 49.73
20	140	58 59 31.1	59 30.2	144.29	0.15	.0053462	34.0	20 5 53.82
21	141	59 57 13.4	57 12.4	144.23	−0.02	.0054268	33.1	20 1 57.91
22	142	60 54 54.4	54 53.3	144.18	+0.12	.0055052	32.1	19 58 2.00
23	143	61 52 34.0	52 32.7	144.12	0.25	.0055813	31.2	19 54 6.09
24	144	62 50 12.2	50 10.7	144.06	0.37	.0056554	30.4	19 50 10.18
25	145	63 47 48.9	47 47.2	144.00	0.47	.0057277	29.7	19 46 14.27
26	146	64 45 24.1	45 22.3	143.94	0.55	.0057981	29.0	19 42 18.36
27	147	65 42 57.9	42 56.0	143.88	0.61	.0058669	28.3	19 38 22.45
28	148	66 40 30.3	40 28.2	143.82	0.65	.0059341	27.7	19 34 26.54
29	149	67 38 1.3	37 59.0	143.76	0.65	.0059998	27.1	19 30 30.63
30	150	68 35 31.0	35 28.5	143.71	0.62	.0060640	26.5	19 26 34.72
31	151	69 32 59.5	32 56.9	143.66	0.56	.0061269	26.0	19 22 38.81
32	152	70 30 26.8	30 24.1	143.62	+0.48	0.0061884	25.4	19 18 42.89

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour −9s.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 1.0	16 8.6	58 40.1	+2.37	59 8.1	+2.29	9 26.5	2.07	11.7
2	16 15.8	16 22.5	59 34.8	2.15	59 59.4	1.95	10 16.8	2.13	12.7
3	16 28.5	16 33.5	60 21.3	1.69	60 39.8	1.39	11 8.9	2.22	13.7
4	16 37.5	16 40.3	60 54.4	1.04	61 4.7	+0.66	12 3.6	2.35	14.7
5	16 41.8	16 42.0	61 10.3	+0.27	61 11.1	−0.12	13 1.6	2.48	15.7
6	16 41.0	16 38.7	61 7.3	−0.51	60 59.0	0.87	14 2.5	2.59	16.7
7	16 35.3	16 31.0	60 46.5	1.20	60 30.1	1.48	15 5.1	2.62	17.7
8	16 25.7	16 19.9	60 11.2	1.71	59 49.6	1.88	16 7.3	2.55	18.7
9	16 13.5	16 6.8	59 26.2	2.01	59 1.6	2.08	17 7.1	2.41	19.7
10	15 59.9	15 53.0	58 36.4	2.11	58 11.0	2.10	18 3.0	2.24	20.7
11	15 46.2	15 39.6	57 46.0	2.06	57 21.7	1.98	18 54.6	2.07	21.7
12	15 33.2	15 27.2	56 58.4	1.89	56 36.3	1.79	19 42.5	1.92	22.7
13	15 21.6	15 16.3	56 15.5	1.67	55 56.2	1.55	20 27.3	1.82	23.7
14	15 11.5	15 7.0	55 38.4	1.42	55 22.1	1.29	21 10.3	1.77	24.7
15	15 3.0	14 59.4	55 7.4	1.16	54 54.2	1.04	21 52.3	1.74	25.7
16	14 56.2	14 53.4	54 42.4	0.92	54 32.1	0.80	22 34.3	1.76	26.7
17	14 51.0	14 48.9	54 23.2	0.69	54 15.6	0.58	23 17.1	1.81	27.7
18	14 47.2	14 45.9	54 9.4	0.47	54 4.4	0.36	☌		28.7
									29.7
19	14 44.9	14 44.2	54 0.7	0.26	53 58.3	−0.15	0 1.2	1.87	0.1
20	14 43.9	14 44.0	53 57.1	−0.04	53 57.4	+0.08	0 46.9	1.94	1.1
21	14 44.4	14 45.3	53 59.1	+0.20	54 2.3	0.33	1 34.5	2.01	2.1
22	14 46.6	14 48.4	54 7.1	0.47	54 13.7	0.62	2 23.5	2.07	3.1
23	14 50.7	14 53.5	54 22.1	0.77	54 32.3	0.93	3 13.3	2.08	4.1
24	14 56.8	15 0.6	54 44.4	1.09	54 58.6	1.26	4 3.3	2.07	5.1
25	15 5.0	15 10.0	55 14.8	1.43	55 33.0	1.60	4 52.8	2.04	6.1
26	15 15.5	15 21.5	55 53.1	1.76	56 15.2	1.92	5 41.4	2.01	7.1
27	15 28.0	15 34.9	56 39.1	2.06	57 4.6	2.18	6 29.3	1.98	8.1
28	15 42.2	15 49.8	57 31.4	2.28	57 59.2	2.34	7 16.9	1.99	9.1
29	15 57.5	16 5.2	58 27.5	2.37	58 55.9	2.35	8 5.0	2.03	10.1
30	16 12.8	16 19.0	59 23.6	2.27	59 50.1	2.12	8 54.6	2.11	11.1
31	16 26.6	16 32.6	60 14.5	1.93	60 36.3	1.68	9 46.7	2.25	12.1
32	16 37.6	16 41.5	60 54.7	+1.37	61 9.0	+1.02	10 42.3	2.40	13.1

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 1.					WEDNESDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	11 43 34.29	2.1544	N. 7 17 43.3	13.408	0	13 29 1.57	2.2617	S. 4 9 26.0	14.686
1	11 45 43.58	2.1553	7 4 17.0	13.465	1	13 31 17.38	2.2654	4 24 7.0	14.678
2	11 47 52.92	2.1563	6 50 47.3	13.521	2	13 33 33.41	2.2691	4 38 47.3	14.663
3	11 50 2.32	2.1573	6 37 14.3	13.576	3	13 35 49.66	2.2729	4 53 26.7	14.648
4	11 52 11.79	2.1583	6 23 38.0	13.630	4	13 38 6.14	2.2767	5 8 5.2	14.632
5	11 54 21.33	2.1594	6 9 58.5	13.683	5	13 40 22.85	2.2805	5 22 42.7	14.615
6	11 56 30.93	2.1606	5 56 15.9	13.733	6	13 42 39.79	2.2844	5 37 19.1	14.596
7	11 58 40.60	2.1619	5 42 30.4	13.783	7	13 44 56.97	2.2883	5 51 54.3	14.575
8	12 0 50.35	2.1632	5 28 41.9	13.833	8	13 47 14.39	2.2923	6 6 28.2	14.552
9	12 3 0.18	2.1646	5 14 50.5	13.882	9	13 49 32.05	2.2964	6 21 0.7	14.527
10	12 5 10.09	2.1660	5 0 56.2	13.928	10	13 51 49.96	2.3005	6 35 31.7	14.501
11	12 7 20.09	2.1674	4 46 59.1	13.973	11	13 54 8.12	2.3047	6 50 1.0	14.473
12	12 9 30.18	2.1689	4 32 59.3	14.017	12	13 56 26.53	2.3089	7 4 28.6	14.443
13	12 11 40.36	2.1705	4 18 56.9	14.060	13	13 58 45.20	2.3132	7 18 54.4	14.411
14	12 13 50.64	2.1721	4 4 51.9	14.102	14	14 1 4.12	2.3175	7 33 18.2	14.378
15	12 16 1.02	2.1738	3 50 44.4	14.143	15	14 3 23.30	2.3219	7 47 39.9	14.343
16	12 18 11.50	2.1755	3 36 34.5	14.182	16	14 5 42.74	2.3263	8 1 59.4	14.306
17	12 20 22.08	2.1773	3 22 22.3	14.220	17	14 8 2.45	2.3307	8 16 16.6	14.267
18	12 22 32.77	2.1792	3 8 7.9	14.256	18	14 10 22.42	2.3352	8 30 31.4	14.226
19	12 24 43.57	2.1811	2 53 51.4	14.292	19	14 12 42.66	2.3397	8 44 43.7	14.183
20	12 26 54.48	2.1830	2 39 32.8	14.326	20	14 15 3.17	2.3443	8 58 53.4	14.137
21	12 29 5.52	2.1850	2 25 12.2	14.360	21	14 17 23.96	2.3489	9 13 0.3	14.090
22	12 31 16.68	2.1871	2 10 49.7	14.392	22	14 19 45.03	2.3535	9 27 4.4	14.042
23	12 33 27.97	2.1893	N. 1 56 25.4	14.422	23	14 22 6.38	2.3581	S. 9 41 5.6	13.991
	TUESDAY 2.					THURSDAY 4.			
0	12 35 39.39	2.1915	N. 1 41 59.4	14.450	0	14 24 28.01	2.3628	S. 9 55 3.7	13.939
1	12 37 50.94	2.1937	1 27 31.7	14.477	1	14 26 49.92	2.3676	10 8 58.5	13.885
2	12 40 2.62	2.1960	1 13 2.4	14.503	2	14 29 12.12	2.3724	10 22 50.0	13.829
3	12 42 14.45	2.1984	0 58 31.6	14.527	3	14 31 34.60	2.3772	10 36 38.0	13.772
4	12 44 26.42	2.2008	0 43 59.3	14.550	4	14 33 57.37	2.3820	10 50 22.4	13.711
5	12 46 38.54	2.2033	0 29 25.6	14.572	5	14 36 20.44	2.3869	11 4 3.2	13.648
6	12 48 50.81	2.2058	0 14 50.6	14.592	6	14 38 43.80	2.3918	11 17 40.2	13.584
7	12 51 3.24	2.2084	N. 0 0 14.5	14.610	7	14 41 7.46	2.3967	11 31 13.3	13.518
8	12 53 15.83	2.2111	S. 0 14 22.7	14.627	8	14 43 31.41	2.4017	11 44 42.3	13.450
9	12 55 28.58	2.2138	0 29 0.8	14.642	9	14 45 55.66	2.4067	11 58 7.2	13.380
10	12 57 41.49	2.2166	0 43 39.8	14.656	10	14 48 20.21	2.4117	12 11 27.9	13.307
11	12 59 54.57	2.2194	0 58 19.6	14.668	11	14 50 45.06	2.4167	12 24 44.2	13.232
12	13 2 7.82	2.2223	1 13 0.1	14.679	12	14 53 10.21	2.4217	12 37 55.9	13.155
13	13 4 21.24	2.2253	1 27 41.2	14.688	13	14 55 35.66	2.4267	12 51 3.0	13.077
14	13 6 34.84	2.2283	1 42 22.8	14.696	14	14 58 1.41	2.4317	13 4 5.4	12.997
15	13 8 48.63	2.2314	1 57 4.8	14.702	15	15 0 27.46	2.4367	13 17 2.9	12.916
16	13 11 2.61	2.2346	2 11 47.1	14.707	16	15 2 53.81	2.4418	13 29 55.5	12.833
17	13 13 16.78	2.2378	2 26 29.6	14.710	17	15 5 20.47	2.4469	13 42 43.1	12.748
18	13 15 31.14	2.2410	2 41 12.3	14.712	18	15 7 47.43	2.4520	13 55 25.3	12.661
19	13 17 45.70	2.2443	2 55 55.0	14.712	19	15 10 14.70	2.4571	14 8 2.3	12.572
20	13 20 0.46	2.2477	3 10 37.7	14.710	20	15 12 42.28	2.4622	14 20 34.0	12.481
21	13 22 15.40	2.2511	3 25 20.3	14.707	21	15 15 10.16	2.4673	14 33 0.2	12.388
22	13 24 30.59	2.2546	3 40 2.6	14.702	22	15 17 38.35	2.4723	14 45 20.8	12.292
23	13 26 45.97	2.2581	3 54 44.5	14.695	23	15 20 6.84	2.4774	14 57 35.6	12.195
24	13 29 1.57	2.2617	S. 4 9 26.0	14.686	24	15 22 35.63	2.4824	S. 15 9 44.5	12.096

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 5.					**SUNDAY 7.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	15 22 35.63	2.4824	S. 15 9 44.5	12.096	0	17 26 47.62	2.6643	S. 22 23 57.4	5.446
1	15 25 4.72	2.4875	15 21 47.3	11.995	1	17 29 27.53	2.6657	22 29 19.1	5.278
2	15 27 34.11	2.4925	15 33 44.0	11.892	2	17 32 7.52	2.6671	22 34 30.7	5.110
3	15 30 3.81	2.4975	15 45 34.5	11.787	3	17 34 47.59	2.6683	22 39 32.2	4.942
4	15 32 33.81	2.5024	15 57 18.7	11.681	4	17 37 27.73	2.6694	22 44 23.6	4.773
5	15 35 4.11	2.5074	16 8 56.4	11.573	5	17 40 7.93	2.6703	22 49 4.9	4.602
6	15 37 34.71	2.5123	16 20 27.6	11.463	6	17 42 48.18	2.6712	22 53 36.0	4.431
7	15 40 5.60	2.5172	16 31 52.1	11.352	7	17 45 28.48	2.6718	22 57 56.8	4.260
8	15 42 36.79	2.5222	16 43 9.8	11.238	8	17 48 8.82	2.6724	23 2 7.3	4.089
9	15 45 8.27	2.5271	16 54 20.6	11.123	9	17 50 49.19	2.6728	23 6 7.5	3.917
10	15 47 40.04	2.5319	17 5 24.4	11.004	10	17 53 29.58	2.6731	23 9 57.4	3.745
11	15 50 12.10	2.5367	17 16 21.1	10.885	11	17 56 9.97	2.6732	23 13 36.9	3.572
12	15 52 44.45	2.5415	17 27 10.6	10.764	12	17 58 50.36	2.6732	23 17 6.1	3.400
13	15 55 17.09	2.5462	17 37 52.8	10.642	13	18 1 30.75	2.6730	23 20 24.9	3.227
14	15 57 50.01	2.5508	17 48 27.6	10.518	14	18 4 11.13	2.6727	23 23 33.3	3.055
15	16 0 23.21	2.5554	17 58 54.9	10.392	15	18 6 51.49	2.6722	23 26 31.4	2.882
16	16 2 56.69	2.5600	18 9 14.6	10.264	16	18 9 31.82	2.6717	23 29 19.1	2.710
17	16 5 30.43	2.5645	18 19 26.6	10.135	17	18 12 12.11	2.6710	23 31 56.5	2.537
18	16 8 4.44	2.5690	18 29 30.8	10.004	18	18 14 52.35	2.6702	23 34 23.5	2.364
19	16 10 38.71	2.5734	18 39 27.1	9.872	19	18 17 32.53	2.6691	23 36 40.1	2.190
20	16 13 13.24	2.5778	18 49 15.4	9.738	20	18 20 12.65	2.6679	23 38 46.3	2.017
21	16 15 48.03	2.5821	18 58 55.6	9.602	21	18 22 52.69	2.6666	23 40 42.2	1.844
22	16 18 23.08	2.5863	19 8 27.6	9.464	22	18 25 32.65	2.6652	23 42 27.7	1.671
23	16 20 58.38	2.5904	S. 19 17 51.3	9.325	23	18 28 12.52	2.6635	S. 23 44 2.8	1.498
	SATURDAY 6.					**MONDAY 8.**			
0	16 23 33.93	2.5945	S. 19 27 6.6	9.185	0	18 30 52.29	2.6618	S. 23 45 27.5	1.326
1	16 26 9.73	2.5985	19 36 13.4	9.043	1	18 33 31.95	2.6599	23 46 42.0	1.155
2	16 28 45.77	2.6025	19 45 11.7	8.900	2	18 36 11.49	2.6579	23 47 46.3	0.983
3	16 31 22.04	2.6064	19 54 1.4	8.755	3	18 38 50.91	2.6558	23 48 40.2	0.812
4	16 33 58.54	2.6102	20 2 42.4	8.609	4	18 41 30.20	2.6535	23 49 23.8	0.641
5	16 36 35.26	2.6138	20 11 14.6	8.462	5	18 44 9.35	2.6510	23 49 57.1	0.470
6	16 39 12.20	2.6173	20 19 37.9	8.313	6	18 46 48.35	2.6485	23 50 20.2	0.300
7	16 41 49.35	2.6208	20 27 52.2	8.163	7	18 49 27.19	2.6458	23 50 33.1	−0.130
8	16 44 26.71	2.6243	20 35 57.5	8.012	8	18 52 5.86	2.6430	23 50 35.9	+0.039
9	16 47 4.27	2.6276	20 43 53.7	7.860	9	18 54 44.36	2.6400	23 50 28.5	0.207
10	16 49 42.02	2.6308	20 51 40.7	7.706	10	18 57 22.67	2.6370	23 50 11.0	0.375
11	16 52 19.96	2.6339	20 59 18.4	7.550	11	19 0 0.79	2.6337	23 49 43.4	0.543
12	16 54 58.09	2.6370	21 6 46.8	7.394	12	19 2 38.71	2.6303	23 49 5.7	0.710
13	16 57 36.40	2.6399	21 14 5.8	7.237	13	19 5 16.44	2.6268	23 48 18.0	0.877
14	17 0 14.88	2.6427	21 21 15.3	7.079	14	19 7 53.96	2.6233	23 47 20.4	1.041
15	17 2 53.53	2.6454	21 28 15.3	6.920	15	19 10 31.26	2.6196	23 46 13.0	1.205
16	17 5 32.34	2.6480	21 35 5.8	6.760	16	19 13 8.33	2.6157	23 44 55.8	1.369
17	17 8 11.30	2.6504	21 41 46.6	6.598	17	19 15 45.16	2.6117	23 43 28.8	1.532
18	17 10 50.40	2.6528	21 48 17.7	6.436	18	19 18 21.75	2.6076	23 41 52.1	1.694
19	17 13 29.64	2.6550	21 54 39.0	6.273	19	19 20 58.09	2.6034	23 40 5.7	1.855
20	17 16 9.01	2.6572	22 0 50.5	6.110	20	19 23 34.17	2.5991	23 38 9.6	2.015
21	17 18 48.50	2.6591	22 6 52.1	5.945	21	19 26 9.99	2.5946	23 36 3.9	2.175
22	17 21 28.10	2.6610	22 12 43.8	5.780	22	19 28 45.53	2.5901	23 33 48.7	2.333
23	17 24 7.81	2.6627	22 18 25.6	5.613	23	19 31 20.80	2.5855	23 31 24.1	2.490
24	17 26 47.62	2.6643	S. 22 23 57.4	5.446	24	19 33 55.79	2.5808	S. 23 28 50.0	2.646

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 33 55.79	2.5808	S. 23 28 50.0	2.646
1	19 36 30.50	2.5759	23 26 6.4	2.802
2	19 39 4.92	2.5710	23 23 13.5	2.956
3	19 41 39.04	2.5660	23 20 11.4	3.110
4	19 44 12.86	2.5609	23 17 0.2	3.262
5	19 46 46.37	2.5557	23 13 39.9	3.413
6	19 49 19.56	2.5504	23 10 10.6	3.563
7	19 51 52.43	2.5450	23 6 32.3	3.712
8	19 54 24.96	2.5395	23 2 45.1	3.860
9	19 56 57.16	2.5339	22 58 49.1	4.007
10	19 59 29.03	2.5283	22 54 44.3	4.152
11	20 2 0.56	2.5226	22 50 30.8	4.297
12	20 4 31.75	2.5168	22 46 8.6	4.440
13	20 7 2.60	2.5110	22 41 37.9	4.582
14	20 9 33.10	2.5051	22 36 58.7	4.722
15	20 12 3.24	2.4991	22 32 11.1	4.862
16	20 14 33.02	2.4931	22 27 15.2	5.000
17	20 17 2.43	2.4870	22 22 11.1	5.137
18	20 19 31.46	2.4808	22 16 58.8	5.272
19	20 22 0.12	2.4746	22 11 38.4	5.407
20	20 24 28.41	2.4684	22 6 10.0	5.539
21	20 26 56.32	2.4621	22 0 33.7	5.670
22	20 29 23.85	2.4557	21 54 49.6	5.799
23	20 31 51.00	2.4493	S. 21 48 57.7	5.928

WEDNESDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 34 17.77	2.4429	S. 21 42 58.2	6.055
1	20 36 44.15	2.4365	21 36 51.0	6.182
2	20 39 10.15	2.4300	21 30 36.3	6.306
3	20 41 35.76	2.4235	21 24 14.1	6.430
4	20 44 0.98	2.4169	21 17 44.6	6.551
5	20 46 25.80	2.4103	21 11 7.8	6.672
6	20 48 50.22	2.4037	21 4 23.8	6.791
7	20 51 14.24	2.3971	20 57 32.7	6.910
8	20 53 37.86	2.3904	20 50 34.6	7.026
9	20 56 1.08	2.3838	20 43 29.5	7.142
10	20 58 23.90	2.3771	20 36 17.6	7.255
11	21 0 46.32	2.3704	20 28 58.9	7.367
12	21 3 8.34	2.3637	20 21 33.6	7.477
13	21 5 29.96	2.3570	20 14 1.7	7.587
14	21 7 51.16	2.3502	20 6 23.2	7.695
15	21 10 11.97	2.3435	19 58 38.2	7.802
16	21 12 32.37	2.3368	19 50 46.8	7.906
17	21 14 52.37	2.3300	19 42 49.2	8.010
18	21 17 11.97	2.3233	19 34 45.4	8.112
19	21 19 31.17	2.3166	19 26 35.6	8.213
20	21 21 49.97	2.3099	19 18 19.8	8.313
21	21 24 8.37	2.3032	19 9 58.1	8.412
22	21 26 26.37	2.2966	19 1 30.5	8.508
23	21 28 43.97	2.2899	18 52 57.1	8.603
24	21 31 1.17	2.2833	S. 18 44 18.0	8.698

THURSDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 31 1.17	2.2833	S. 18 44 18.0	8.698
1	21 33 17.97	2.2766	18 35 33.3	8.791
2	21 35 34.37	2.2700	18 26 43.1	8.883
3	21 37 50.37	2.2634	18 17 47.4	8.973
4	21 40 5.97	2.2568	18 8 46.3	9.061
5	21 42 21.18	2.2503	17 59 40.0	9.148
6	21 44 36.00	2.2438	17 50 28.5	9.233
7	21 46 50.43	2.2373	17 41 11.9	9.318
8	21 49 4.48	2.2308	17 31 50.2	9.402
9	21 51 18.14	2.2244	17 22 23.5	9.485
10	21 53 31.41	2.2180	17 12 51.9	9.565
11	21 55 44.30	2.2116	17 3 15.6	9.645
12	21 57 56.81	2.2053	16 53 34.6	9.723
13	22 0 8.94	2.1990	16 43 49.0	9.800
14	22 2 20.69	2.1928	16 33 58.8	9.875
15	22 4 32.07	2.1865	16 24 4.1	9.949
16	22 6 43.08	2.1803	16 14 4.9	10.022
17	22 8 53.72	2.1742	16 4 1.3	10.094
18	22 11 3.99	2.1681	15 53 53.4	10.164
19	22 13 13.90	2.1621	15 43 41.4	10.234
20	22 15 23.45	2.1561	15 33 25.3	10.301
21	22 17 32.64	2.1502	15 23 5.2	10.368
22	22 19 41.47	2.1443	15 12 41.1	10.433
23	22 21 49.95	2.1384	S. 15 2 13.1	10.498

FRIDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 23 58.08	2.1326	S. 14 51 41.3	10.561
1	22 26 5.86	2.1269	14 41 5.8	10.623
2	22 28 13.29	2.1212	14 30 26.6	10.683
3	22 30 20.38	2.1156	14 19 43.8	10.743
4	22 32 27.14	2.1100	14 8 57.5	10.802
5	22 34 33.57	2.1044	13 58 7.7	10.860
6	22 36 39.67	2.0989	13 47 14.4	10.916
7	22 38 45.44	2.0935	13 36 17.8	10.972
8	22 40 50.89	2.0881	13 25 17.9	11.026
9	22 42 56.02	2.0828	13 14 14.9	11.078
10	22 45 0.83	2.0775	13 3 8.8	11.129
11	22 47 5.32	2.0723	12 51 59.7	11.178
12	22 49 9.50	2.0671	12 40 47.7	11.227
13	22 51 13.37	2.0620	12 29 32.7	11.275
14	22 53 16.94	2.0570	12 18 14.8	11.322
15	22 55 20.21	2.0520	12 6 54.1	11.368
16	22 57 23.17	2.0470	11 55 30.7	11.413
17	22 59 25.84	2.0422	11 44 4.6	11.458
18	23 1 28.22	2.0374	11 32 35.8	11.501
19	23 3 30.32	2.0327	11 21 4.5	11.543
20	23 5 32.14	2.0280	11 9 30.7	11.583
21	23 7 33.68	2.0234	10 57 54.6	11.622
22	23 9 34.95	2.0188	10 46 16.3	11.660
23	23 11 35.95	2.0144	10 34 35.7	11.698
24	23 13 36.68	2.0100	S. 10 22 52.8	11.734

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 13 36.68	2.0100	S. 10 22 52.8	11.734
1	23 15 37.14	2.0056	10 11 7.6	11.770
2	23 17 37.34	2.0013	9 59 20.3	11.804
3	23 19 37.28	1.9971	9 47 31.0	11.837
4	23 21 36.97	1.9929	9 35 39.8	11.869
5	23 23 36.42	1.9888	9 23 46.7	11.900
6	23 25 35.63	1.9848	9 11 51.7	11.930
7	23 27 34.60	1.9808	8 59 54.9	11.960
8	23 29 33.33	1.9769	8 47 56.3	11.989
9	23 31 31.83	1.9731	8 35 56.0	12.018
10	23 33 30.10	1.9693	8 23 54.1	12.044
11	23 35 28.15	1.9656	8 11 50.6	12.070
12	23 37 25.98	1.9619	7 59 45.6	12.094
13	23 39 23.59	1.9583	7 47 39.1	12.118
14	23 41 20.99	1.9548	7 35 31.2	12.142
15	23 43 18.18	1.9514	7 23 21.9	12.165
16	23 45 15.16	1.9480	7 11 11.3	12.186
17	23 47 11.93	1.9447	6 58 59.5	12.207
18	23 49 8.50	1.9414	6 46 46.5	12.226
19	23 51 4.88	1.9382	6 34 32.3	12.245
20	23 53 1.08	1.9351	6 22 17.0	12.263
21	23 54 57.09	1.9320	6 10 0.6	12.280
22	23 56 52.92	1.9290	5 57 43.2	12.296
23	23 58 48.57	1.9261	S. 5 45 24.9	12.312

SUNDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 0 44.05	1.9233	S. 5 33 5.7	12.326
1	0 2 39.35	1.9205	5 20 45.8	12.340
2	0 4 34.48	1.9178	5 8 25.1	12.353
3	0 6 29.45	1.9151	4 56 3.6	12.365
4	0 8 24.27	1.9125	4 43 41.4	12.376
5	0 10 18.94	1.9100	4 31 18.5	12.387
6	0 12 13.46	1.9075	4 18 55.0	12.396
7	0 14 7.84	1.9051	4 6 31.0	12.405
8	0 16 2.08	1.9027	3 54 6.5	12.412
9	0 17 56.18	1.9004	3 41 41.6	12.418
10	0 19 50.14	1.8982	3 29 16.4	12.424
11	0 21 43.97	1.8961	3 16 50.8	12.430
12	0 23 37.67	1.8940	3 4 24.9	12.434
13	0 25 31.25	1.8920	2 51 58.7	12.438
14	0 27 24.71	1.8900	2 39 32.3	12.441
15	0 29 18.06	1.8881	2 27 5.8	12.443
16	0 31 11.29	1.8863	2 14 39.2	12.444
17	0 33 4.41	1.8845	2 2 12.6	12.445
18	0 34 57.42	1.8828	1 49 46.0	12.445
19	0 36 50.33	1.8812	1 37 19.4	12.443
20	0 38 43.14	1.8796	1 24 52.9	12.442
21	0 40 35.86	1.8781	1 12 26.5	12.440
22	0 42 28.50	1.8766	1 0 0.2	12.437
23	0 44 21.05	1.8752	0 47 34.0	12.433
24	0 46 13.52	1.8738	S. 0 35 8.1	12.428

MONDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 46 13.52	1.8738	S. 0 35 8.1	12.428
1	0 48 5.91	1.8725	0 22 42.5	12.423
2	0 49 58.23	1.8713	S. 0 10 17.3	12.416
3	0 51 50.47	1.8702	N. 0 2 7.4	12.409
4	0 53 42.64	1.8691	0 14 31.6	12.401
5	0 55 34.75	1.8681	0 26 55.3	12.392
6	0 57 26.81	1.8671	0 39 18.5	12.383
7	0 59 18.81	1.8662	0 51 41.2	12.373
8	1 1 10.76	1.8653	1 4 3.3	12.362
9	1 3 2.66	1.8645	1 16 24.7	12.350
10	1 4 54.51	1.8638	1 28 45.4	12.338
11	1 6 46.32	1.8632	1 41 5.3	12.325
12	1 8 38.09	1.8626	1 53 24.4	12.311
13	1 10 29.82	1.8620	2 5 42.6	12.297
14	1 12 21.52	1.8615	2 17 59.9	12.282
15	1 14 13.19	1.8611	2 30 16.3	12.267
16	1 16 4.83	1.8607	2 42 31.8	12.250
17	1 17 56.45	1.8604	2 54 46.3	12.233
18	1 19 48.06	1.8601	3 6 59.7	12.215
19	1 21 39.66	1.8599	3 19 12.0	12.197
20	1 23 31.25	1.8598	3 31 23.2	12.177
21	1 25 22.83	1.8597	3 43 33.2	12.157
22	1 27 14.41	1.8596	3 55 42.0	12.136
23	1 29 5.99	1.8596	N. 4 7 49.5	12.115

TUESDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 30 57.57	1.8597	N. 4 19 55.8	12.093
1	1 32 49.15	1.8598	4 32 0.7	12.070
2	1 34 40.74	1.8599	4 44 4.1	12.045
3	1 36 32.34	1.8601	4 56 6.0	12.020
4	1 38 23.96	1.8604	5 8 6.4	11.994
5	1 40 15.60	1.8607	5 20 5.2	11.967
6	1 42 7.26	1.8611	5 32 2.4	11.940
7	1 43 58.94	1.8615	5 43 58.0	11.913
8	1 45 50.64	1.8620	5 55 52.0	11.886
9	1 47 42.37	1.8626	6 7 44.4	11.858
10	1 49 34.13	1.8632	6 19 35.1	11.829
11	1 51 25.93	1.8638	6 31 24.1	11.800
12	1 53 17.78	1.8645	6 43 11.3	11.769
13	1 55 9.67	1.8652	6 54 56.6	11.738
14	1 57 1.61	1.8660	7 6 39.9	11.705
15	1 58 53.60	1.8668	7 18 21.2	11.672
16	2 0 45.64	1.8677	7 30 0.5	11.638
17	2 2 37.73	1.8686	7 41 37.7	11.603
18	2 4 29.87	1.8696	7 53 12.8	11.568
19	2 6 22.07	1.8707	8 4 45.8	11.532
20	2 8 14.34	1.8718	8 16 16.6	11.495
21	2 10 6.68	1.8729	8 27 45.2	11.458
22	2 11 59.09	1.8741	8 39 11.6	11.421
23	2 13 51.57	1.8753	8 50 35.7	11.383
24	2 15 44.12	1.8765	N. 9 1 57.5	11.344

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 15 44.12	1.8765	N. 9 1 57.5	11.344
1	2 17 36.75	1.8778	9 13 17.0	11.305
2	2 19 29.46	1.8792	9 24 34.1	11.264
3	2 21 22.25	1.8806	9 35 48.7	11.222
4	2 23 15.12	1.8820	9 47 0.7	11.180
5	2 25 8.08	1.8835	9 58 10.1	11.137
6	2 27 1.13	1.8850	10 9 16.9	11.093
7	2 28 54.27	1.8866	10 20 21.1	11.048
8	2 30 47.51	1.8882	10 31 22.7	11.003
9	2 32 40.85	1.8898	10 42 21.6	10.958
10	2 34 34.29	1.8915	10 53 17.7	10.912
11	2 36 27.83	1.8932	11 4 10.9	10.865
12	2 38 21.47	1.8950	11 15 1.3	10.817
13	2 40 15.22	1.8968	11 25 48.8	10.768
14	2 42 9.08	1.8986	11 36 33.4	10.719
15	2 44 3.05	1.9005	11 47 15.0	10.670
16	2 45 57.13	1.9024	11 57 53.6	10.619
17	2 47 51.33	1.9043	12 8 29.2	10.568
18	2 49 45.65	1.9063	12 19 1.7	10.516
19	2 51 40.09	1.9083	12 29 31.0	10.463
20	2 53 34.65	1.9103	12 39 57.1	10.410
21	2 55 29.33	1.9124	12 50 20.1	10.357
22	2 57 24.14	1.9145	13 0 39.9	10.302
23	2 59 19.07	1.9166	N.13 10 56.4	10.247

THURSDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 1 14.13	1.9188	N.13 21 9.5	10.190
1	3 3 9.32	1.9210	13 31 19.2	10.133
2	3 5 4.65	1.9233	13 41 25.5	10.075
3	3 7 0.12	1.9255	13 51 28.3	10.017
4	3 8 55.72	1.9278	14 1 27.5	9.958
5	3 10 51.46	1.9302	14 11 23.1	9.898
6	3 12 47.34	1.9326	14 21 15.1	9.838
7	3 14 43.37	1.9350	14 31 3.4	9.777
8	3 16 39.54	1.9374	14 40 48.0	9.715
9	3 18 35.86	1.9398	14 50 28.9	9.652
10	3 20 32.32	1.9423	15 0 6.0	9.589
11	3 22 28.93	1.9448	15 9 39.4	9.525
12	3 24 25.69	1.9473	15 19 9.0	9.460
13	3 26 22.60	1.9498	15 28 34.7	9.395
14	3 28 19.66	1.9523	15 37 56.4	9.329
15	3 30 16.87	1.9549	15 47 14.1	9.262
16	3 32 14.24	1.9575	15 56 27.8	9.195
17	3 34 11.77	1.9601	16 5 37.4	9.127
18	3 36 9.46	1.9628	16 14 42.9	9.057
19	3 38 7.31	1.9654	16 23 44.3	8.987
20	3 40 5.32	1.9681	16 32 41.5	8.917
21	3 42 3.49	1.9708	16 41 34.4	8.847
22	3 44 1.82	1.9735	16 50 23.0	8.775
23	3 46 0.31	1.9762	16 59 7.3	8.703
24	3 47 58.96	1.9790	N.17 7 47.3	8.630

FRIDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 47 58.96	1.9790	N.17 7 47.3	8.630
1	3 49 57.77	1.9817	17 16 22.9	8.557
2	3 51 56.75	1.9845	17 24 54.1	8.482
3	3 53 55.90	1.9873	17 33 20.8	8.407
4	3 55 55.22	1.9901	17 41 42.9	8.331
5	3 57 54.71	1.9929	17 50 0.4	8.255
6	3 59 54.37	1.9957	17 58 13.4	8.178
7	4 1 54.20	1.9985	18 6 21.8	8.100
8	4 3 54.19	2.0013	18 14 25.5	8.022
9	4 5 54.35	2.0041	18 22 24.4	7.943
10	4 7 54.68	2.0069	18 30 18.6	7.863
11	4 9 55.18	2.0097	18 38 8.0	7.783
12	4 11 55.85	2.0126	18 45 52.6	7.702
13	4 13 56.69	2.0154	18 53 32.3	7.621
14	4 15 57.70	2.0183	19 1 7.0	7.538
15	4 17 58.89	2.0211	19 8 36.7	7.455
16	4 20 0.24	2.0240	19 16 1.4	7.372
17	4 22 1.77	2.0269	19 23 21.1	7.288
18	4 24 3.46	2.0297	19 30 35.8	7.203
19	4 26 5.33	2.0326	19 37 45.4	7.118
20	4 28 7.36	2.0354	19 44 49.8	7.031
21	4 30 9.56	2.0382	19 51 49.1	6.944
22	4 32 11.94	2.0410	19 58 43.2	6.856
23	4 34 14.48	2.0438	N.20 5 32.0	6.768

SATURDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 36 17.20	2.0466	N.20 12 15.4	6.679
1	4 38 20.08	2.0494	20 18 53.4	6.590
2	4 40 23.13	2.0522	20 25 26.0	6.500
3	4 42 26.35	2.0550	20 31 53.2	6.410
4	4 44 29.74	2.0578	20 38 15.0	6.319
5	4 46 33.29	2.0606	20 44 31.3	6.223
6	4 48 37.01	2.0633	20 50 42.1	6.136
7	4 50 40.89	2.0661	20 56 47.5	6.043
8	4 52 44.94	2.0688	21 2 47.3	5.949
9	4 54 49.15	2.0715	21 8 41.5	5.855
10	4 56 53.52	2.0742	21 14 30.0	5.760
11	4 58 58.05	2.0769	21 20 12.8	5.665
12	5 1 2.74	2.0795	21 25 49.8	5.569
13	5 3 7.59	2.0822	21 31 21.0	5.473
14	5 5 12.61	2.0848	21 36 46.5	5.376
15	5 7 17.79	2.0874	21 42 6.2	5.278
16	5 9 23.12	2.0899	21 47 20.0	5.180
17	5 11 28.59	2.0925	21 52 27.8	5.082
18	5 13 34.21	2.0950	21 57 29.7	4.983
19	5 15 39.98	2.0975	22 2 25.7	4.883
20	5 17 45.90	2.1000	22 7 15.7	4.783
21	5 19 51.97	2.1024	22 11 59.7	4.683
22	5 21 58.19	2.1048	22 16 37.7	4.582
23	5 24 4.55	2.1072	22 21 9.6	4.480
24	5 26 11.06	2.1096	N.22 25 35.3	4.378

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 26 11.06	2.1096	N.22 25 35.3	4.378
1	5 28 17.71	2.1120	22 29 54.9	4.275
2	5 30 24.50	2.1143	22 34 8.3	4.173
3	5 32 31.43	2.1166	22 38 15.6	4.070
4	5 34 38.50	2.1188	22 42 16.7	3.966
5	5 36 45.70	2.1210	22 46 11.6	3.862
6	5 38 53.03	2.1232	22 50 0.2	3.757
7	5 41 0.49	2.1254	22 53 42.5	3.652
8	5 43 8.07	2.1276	22 57 18.5	3.546
9	5 45 15.78	2.1296	23 0 48.1	3.440
10	5 47 23.62	2.1316	23 4 11.3	3.334
11	5 49 31.58	2.1336	23 7 28.1	3.227
12	5 51 39.66	2.1356	23 10 38.5	3.120
13	5 53 47.85	2.1375	23 13 42.5	3.012
14	5 55 56.16	2.1394	23 16 40.0	2.905
15	5 58 4.58	2.1413	23 19 31.0	2.797
16	6 0 13.11	2.1431	23 22 15.5	2.689
17	6 2 21.75	2.1449	23 24 53.5	2.580
18	6 4 30.50	2.1466	23 27 24.9	2.471
19	6 6 39.35	2.1483	23 29 49.8	2.362
20	6 8 48.30	2.1499	23 32 8.1	2.251
21	6 10 57.35	2.1515	23 34 19.8	2.140
22	6 13 6.49	2.1531	23 36 24.8	2.029
23	6 15 15.72	2.1546	N.23 38 23.2	1.918

MONDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 17 25.04	2.1561	N.23 40 14.9	1.807
1	6 19 34.45	2.1575	23 41 59.9	1.696
2	6 21 43.94	2.1588	23 43 38.2	1.584
3	6 23 53.51	2.1602	23 45 9.8	1.472
4	6 26 3.16	2.1615	23 46 34.7	1.360
5	6 28 12.89	2.1628	23 47 53.0	1.248
6	6 30 22.69	2.1640	23 49 4.5	1.135
7	6 32 32.56	2.1652	23 50 9.2	1.022
8	6 34 42.50	2.1663	23 51 7.1	0.900
9	6 36 52.51	2.1673	23 51 58.2	0.795
10	6 39 2.59	2.1683	23 52 42.5	0.682
11	6 41 12.73	2.1693	23 53 20.0	0.568
12	6 43 22.93	2.1702	23 53 50.7	0.454
13	6 45 33.18	2.1711	23 54 14.6	0.340
14	6 47 43.47	2.1719	23 54 31.6	0.226
15	6 49 53.81	2.1727	23 54 41.8	+0.112
16	6 52 4.20	2.1734	23 54 45.1	−0.002
17	6 54 14.63	2.1741	23 54 41.5	0.116
18	6 56 25.10	2.1747	23 54 31.0	0.231
19	6 58 35.60	2.1753	23 54 13.6	0.345
20	7 0 46.14	2.1759	23 53 49.4	0.459
21	7 2 56.71	2.1764	23 53 18.4	0.575
22	7 5 7.31	2.1768	23 52 40.5	0.690
23	7 7 17.93	2.1772	23 51 55.7	0.805
24	7 9 28.58	2.1776	N.23 51 3.9	0.920

TUESDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 9 28.58	2.1776	N.23 51 3.9	0.920
1	7 11 39.26	2.1779	23 50 5.3	1.035
2	7 13 49.96	2.1782	23 48 59.8	1.150
3	7 16 0.67	2.1784	23 47 47.4	1.265
4	7 18 11.38	2.1785	23 46 28.1	1.380
5	7 20 22.09	2.1786	23 45 1.9	1.495
6	7 22 32.81	2.1787	23 43 28.8	1.610
7	7 24 43.53	2.1788	23 41 48.8	1.725
8	7 26 54.25	2.1788	23 40 1.9	1.840
9	7 29 4.97	2.1787	23 38 8.0	1.955
10	7 31 15.69	2.1786	23 36 7.2	2.070
11	7 33 26.40	2.1784	23 33 59.5	2.185
12	7 35 37.10	2.1782	23 31 44.9	2.300
13	7 37 47.79	2.1780	23 29 23.5	2.415
14	7 39 58.47	2.1777	23 26 55.2	2.529
15	7 42 9.13	2.1774	23 24 20.0	2.643
16	7 44 19.77	2.1771	23 21 37.9	2.758
17	7 46 30.38	2.1767	23 18 49.0	2.872
18	7 48 40.96	2.1763	23 15 53.4	2.985
19	7 50 51.52	2.1758	23 12 51.0	3.098
20	7 53 2.05	2.1753	23 9 41.7	3.212
21	7 55 12.55	2.1747	23 6 25.6	3.326
22	7 57 23.02	2.1741	23 3 2.7	3.440
23	7 59 33.45	2.1735	N.22 59 33.0	3.553

WEDNESDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 1 43.84	2.1728	N.22 55 56.5	3.666
1	8 3 54.19	2.1721	22 52 13.2	3.778
2	8 6 4.50	2.1713	22 48 23.2	3.891
3	8 8 14.76	2.1705	22 44 26.4	4.003
4	8 10 24.97	2.1697	22 40 22.9	4.116
5	8 12 35.13	2.1689	22 36 12.6	4.228
6	8 14 45.24	2.1680	22 31 55.5	4.340
7	8 16 55.30	2.1671	22 27 31.7	4.452
8	8 19 5.31	2.1662	22 23 1.3	4.563
9	8 21 15.26	2.1653	22 18 24.3	4.673
10	8 23 25.15	2.1643	22 13 40.7	4.783
11	8 25 34.98	2.1633	22 8 50.4	4.893
12	8 27 44.75	2.1623	22 3 53.5	5.003
13	8 29 54.46	2.1613	21 58 50.0	5.113
14	8 32 4.11	2.1602	21 53 39.9	5.223
15	8 34 13.69	2.1591	21 48 23.3	5.332
16	8 36 23.20	2.1579	21 43 0.2	5.441
17	8 38 32.64	2.1568	21 37 30.6	5.550
18	8 40 42.01	2.1556	21 31 54.4	5.658
19	8 42 51.31	2.1544	21 26 11.7	5.766
20	8 45 0.54	2.1532	21 20 22.5	5.873
21	8 47 9.69	2.1520	21 14 26.9	5.980
22	8 49 18.77	2.1507	21 8 24.9	6.087
23	8 51 27.77	2.1495	21 2 16.5	6.193
24	8 53 36.70	2.1482	N.20 56 1.7	6.299

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 53 36.70	2.1482	N.20 56 1.7	6.299
1	8 55 45.55	2.1469	20 49 40.6	6.405
2	8 57 54.33	2.1456	20 43 13.2	6.510
3	9 0 3.03	2.1443	20 36 39.5	6.614
4	9 2 11.65	2.1430	20 29 59.6	6.719
5	9 4 20.19	2.1417	20 23 13.4	6.823
6	9 6 28.65	2.1403	20 16 20.9	6.927
7	9 8 37.03	2.1390	20 9 22.2	7.030
8	9 10 45.32	2.1376	20 2 17.3	7.132
9	9 12 53.52	2.1362	19 55 6.3	7.234
10	9 15 1.65	2.1348	19 47 49.2	7.336
11	9 17 9.70	2.1334	19 40 26.1	7.437
12	9 19 17.67	2.1320	19 32 56.9	7.538
13	9 21 25.56	2.1306	19 25 21.6	7.638
14	9 23 33.36	2.1293	19 17 40.3	7.738
15	9 25 41.08	2.1279	19 9 53.1	7.837
16	9 27 48.72	2.1265	19 1 59.9	7.935
17	9 29 56.28	2.1251	18 54 0.8	8.033
18	9 32 3.75	2.1238	18 45 55.8	8.131
19	9 34 11.14	2.1224	18 37 44.9	8.228
20	9 36 18.45	2.1211	18 29 28.2	8.326
21	9 38 25.68	2.1198	18 21 5.6	8.423
22	9 40 32.83	2.1185	18 12 37.2	8.519
23	9 42 39.90	2.1171	N.18 4 3.1	8.615

FRIDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 44 46.89	2.1158	N.17 55 23.3	8.710
1	9 46 53.80	2.1145	17 46 37.8	8.805
2	9 49 0.63	2.1132	17 37 46.7	8.899
3	9 51 7.39	2.1119	17 28 50.0	8.992
4	9 53 14.07	2.1107	17 19 47.7	9.085
5	9 55 20.68	2.1094	17 10 39.8	9.177
6	9 57 27.21	2.1082	17 1 26.5	9.269
7	9 59 33.67	2.1070	16 52 7.7	9.360
8	10 1 40.05	2.1058	16 42 43.4	9.450
9	10 3 46.36	2.1046	16 33 13.7	9.540
10	10 5 52.60	2.1035	16 23 38.6	9.629
11	10 7 58.78	2.1023	16 13 58.2	9.718
12	10 10 4.89	2.1012	16 4 12.5	9.806
13	10 12 10.94	2.1001	15 54 21.5	9.893
14	10 14 16.92	2.0990	15 44 25.3	9.980
15	10 16 22.83	2.0980	15 34 23.9	10.067
16	10 18 28.68	2.0970	15 24 17.3	10.153
17	10 20 34.47	2.0960	15 14 5.6	10.238
18	10 22 40.20	2.0950	15 3 48.8	10.323
19	10 24 45.88	2.0941	14 53 26.9	10.407
20	10 26 51.50	2.0933	14 43 0.0	10.490
21	10 28 57.07	2.0924	14 32 28.2	10.572
22	10 31 2.59	2.0915	14 21 51.5	10.654
23	10 33 8.06	2.0907	14 11 10.0	10.735
24	10 35 13.48	2.0900	N.14 0 23.6	10.815

SATURDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 35 13.48	2.0900	N.14 0 23.6	10.815
1	10 37 18.85	2.0892	13 49 32.4	10.895
2	10 39 24.18	2.0885	13 38 36.4	10.974
3	10 41 29.47	2.0879	13 27 35.6	11.053
4	10 43 34.73	2.0873	13 16 30.1	11.130
5	10 45 39.95	2.0867	13 5 19.9	11.206
6	10 47 45.14	2.0862	12 54 5.1	11.284
7	10 49 50.30	2.0857	12 42 45.8	11.360
8	10 51 55.43	2.0852	12 31 22.0	11.435
9	10 54 0.53	2.0848	12 19 53.7	11.509
10	10 56 5.60	2.0844	12 8 20.9	11.583
11	10 58 10.65	2.0841	11 56 43.6	11.657
12	11 0 15.68	2.0838	11 45 2.0	11.729
13	11 2 20.69	2.0835	11 33 16.1	11.800
14	11 4 25.69	2.0833	11 21 25.9	11.870
15	11 6 30.68	2.0831	11 9 31.6	11.940
16	11 8 35.66	2.0830	10 57 33.2	12.009
17	11 10 40.64	2.0829	10 45 30.6	12.078
18	11 12 45.62	2.0828	10 33 23.9	12.146
19	11 14 50.60	2.0829	10 21 13.1	12.213
20	11 16 55.58	2.0830	10 8 58.4	12.278
21	11 19 0.57	2.0832	9 56 39.8	12.343
22	11 21 5.57	2.0834	9 44 17.3	12.408
23	11 23 10.58	2.0836	N. 9 31 50.9	12.472

SUNDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 25 15.61	2.0839	N. 9 19 20.7	12.536
1	11 27 20.65	2.0843	9 6 46.8	12.597
2	11 29 25.71	2.0847	8 54 9.2	12.658
3	11 31 30.80	2.0852	8 41 27.9	12.718
4	11 33 35.92	2.0857	8 28 43.0	12.778
5	11 35 41.07	2.0862	8 15 54.6	12.837
6	11 37 46.26	2.0868	8 3 2.7	12.895
7	11 39 51.49	2.0875	7 50 7.3	12.952
8	11 41 56.76	2.0882	7 37 8.5	13.007
9	11 44 2.08	2.0890	7 24 6.5	13.062
10	11 46 7.45	2.0898	7 11 1.2	13.115
11	11 48 12.87	2.0907	6 57 52.7	13.168
12	11 50 18.34	2.0917	6 44 41.1	13.220
13	11 52 23.87	2.0927	6 31 26.4	13.272
14	11 54 29.46	2.0938	6 18 8.6	13.322
15	11 56 35.12	2.0950	6 4 47.8	13.372
16	11 58 40.85	2.0962	5 51 24.0	13.420
17	12 0 46.66	2.0975	5 37 57.3	13.467
18	12 2 52.55	2.0988	5 24 27.8	13.513
19	12 4 58.52	2.1002	5 10 55.6	13.558
20	12 7 4.58	2.1017	4 57 20.7	13.603
21	12 9 10.73	2.1033	4 43 43.1	13.648
22	12 11 16.98	2.1049	4 30 2.8	13.691
23	12 13 23.33	2.1066	4 16 20.0	13.733
24	12 15 29.78	2.1083	N. 4 2 34.7	13.773

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 15 29.78	2.1083	N. 4 2 34.7	13.773
1	12 17 36.33	2.1101	3 48 47.1	13.813
2	12 19 42.99	2.1120	3 34 57.2	13.851
3	12 21 49.76	2.1139	3 21 5.1	13.888
4	12 23 56.65	2.1158	3 7 10.8	13.924
5	12 26 3.66	2.1179	2 53 14.4	13.960
6	12 28 10.79	2.1200	2 39 15.9	13.994
7	12 30 18.06	2.1223	2 25 15.3	14.027
8	12 32 25.46	2.1246	2 11 12.8	14.057
9	12 34 33.00	2.1269	1 57 8.4	14.087
10	12 36 40.68	2.1293	1 43 2.3	14.116
11	12 38 48.51	2.1318	1 28 54.5	14.145
12	12 40 56.49	2.1343	1 14 45.0	14.172
13	12 43 4.62	2.1369	1 0 33.9	14.198
14	12 45 12.91	2.1396	0 46 21.4	14.222
15	12 47 21.36	2.1424	0 32 7.5	14.245
16	12 49 29.98	2.1452	0 17 52.2	14.266
17	12 51 38.77	2.1481	N. 0 3 35.6	14.287
18	12 53 47.74	2.1510	S. 0 10 42.2	14.306
19	12 55 56.89	2.1541	0 25 1.1	14.325
20	12 58 6.23	2.1572	0 39 21.1	14.342
21	13 0 15.76	2.1604	0 53 42.1	14.358
22	13 2 25.48	2.1636	1 8 4.0	14.372
23	13 4 35.39	2.1669	S. 1 22 26.7	14.385

TUESDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 6 45.50	2.1702	S. 1 36 50.1	14.397
1	13 8 55.81	2.1737	1 51 14.1	14.407
2	13 11 6.33	2.1772	2 5 38.7	14.415
3	13 13 17.06	2.1808	2 20 3.8	14.422
4	13 15 28.01	2.1845	2 34 29.3	14.428
5	13 17 39.19	2.1883	2 48 55.1	14.432
6	13 19 50.60	2.1921	3 3 21.1	14.434
7	13 22 2.24	2.1959	3 17 47.2	14.435
8	13 24 14.11	2.1998	3 32 13.3	14.434
9	13 26 26.22	2.2039	3 46 39.3	14.433
10	13 28 38.58	2.2080	4 1 5.2	14.431
11	13 30 51.19	2.2121	4 15 30.9	14.427
12	13 33 4.05	2.2163	4 29 56.3	14.421
13	13 35 17.16	2.2205	4 44 21.3	14.413
14	13 37 30.53	2.2248	4 58 45.8	14.403
15	13 39 44.16	2.2292	5 13 9.6	14.392
16	13 41 58.05	2.2338	5 27 32.8	14.379
17	13 44 12.21	2.2384	5 41 55.2	14.365
18	13 46 26.64	2.2430	5 56 16.7	14.349
19	13 48 41.35	2.2477	6 10 37.2	14.332
20	13 50 56.35	2.2524	6 24 56.6	14.313
21	13 53 11.64	2.2572	6 39 14.8	14.293
22	13 55 27.22	2.2620	6 53 31.8	14.271
23	13 57 43.09	2.2670	7 7 47.4	14.247
24	13 59 59.26	2.2720	S. 7 22 1.5	14.221

WEDNESDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 59 59.26	2.2720	S. 7 22 1.5	14.221
1	14 2 15.72	2.2771	7 36 14.0	14.193
2	14 4 32.49	2.2822	7 50 24.8	14.164
3	14 6 49.57	2.2873	8 4 33.8	14.133
4	14 9 6.96	2.2925	8 18 40.9	14.100
5	14 11 24.66	2.2978	8 32 46.0	14.065
6	14 13 42.69	2.3032	8 46 48.9	14.028
7	14 16 1.04	2.3086	9 0 49.5	13.990
8	14 18 19.72	2.3140	9 14 47.8	13.950
9	14 20 38.73	2.3195	9 28 43.6	13.908
10	14 22 58.07	2.3250	9 42 36.8	13.865
11	14 25 17.74	2.3306	9 56 27.3	13.820
12	14 27 37.74	2.3362	10 10 15.0	13.772
13	14 29 58.08	2.3419	10 23 59.8	13.722
14	14 32 18.76	2.3477	10 37 41.6	13.670
15	14 34 39.78	2.3534	10 51 20.3	13.617
16	14 37 1.15	2.3592	11 4 55.8	13.562
17	14 39 22.88	2.3651	11 18 28.0	13.506
18	14 41 44.96	2.3710	11 31 56.7	13.447
19	14 44 7.40	2.3769	11 45 21.8	13.387
20	14 46 30.20	2.3829	11 58 43.2	13.324
21	14 48 53.36	2.3889	12 12 0.8	13.260
22	14 51 16.88	2.3950	12 25 14.5	13.193
23	14 53 40.76	2.4011	S. 12 38 24.1	13.125

THURSDAY, JUNE 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 56 5.00	2.4071	S. 12 51 29.5	13.054

PHASES OF THE MOON.

	d	h	m
○ Full Moon, . . .	4	11	0.3
☾ Last Quarter, . .	11	2	23.6
● New Moon, . .	18	22	45.1
☽ First Quarter, . .	27	1	2.1

	d	h
☾ Perigee, ...	5	8.2
☾ Apogee, ...	20	3.9

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Venus	W.	98° 32′ 27″	2756	100° 7′ 52″	2737	101° 43′ 43″	2716	103° 20′ 1″	2696
	Jupiter	W.	87 59 23	2424	89 42 24	2405	91 25 51	2387	93 9 44	2368
	Pollux	W.	61 33 18	2384	63 17 16	2366	65 1 40	2346	66 46 32	2328
	Regulus	W.	25 40 13	2411	27 23 32	2387	29 7 25	2365	30 51 50	2344
	Antares	E.	75 9 48	2395	73 26 6	2378	71 41 59	2359	69 57 25	2343
	Saturn	E.	106 18 25	2359	104 33 51	2341	102 48 51	2322	101 3 24	2304
2	Jupiter	W.	101 55 38	2282	103 42 4	2266	105 28 54	2250	107 16 7	2234
	Pollux	W.	75 37 28	2240	77 24 56	2224	79 12 48	2208	81 1 3	2192
	Regulus	W.	39 41 27	2245	41 28 47	2227	43 16 34	2212	45 4 44	2194
	Antares	E.	61 8 36	2262	59 21 40	2247	57 34 22	2233	55 46 43	2220
	Saturn	E.	92 9 39	2218	90 21 38	2202	88 33 14	2186	86 44 25	2172
3	Regulus	W.	54 11 36	2120	56 2 4	2109	57 52 50	2096	59 43 56	2085
	Mars	W.	33 4 8	2137	34 54 10	2124	36 44 32	2111	38 35 14	2099
	Antares	E.	46 43 52	2164	44 54 30	2155	43 4 54	2148	41 15 8	2142
	Saturn	E.	77 34 51	2101	75 43 54	2090	74 52 39	2077	72 1 5	2067
	α Aquilæ	E.	94 25 55	2808	92 51 37	2792	91 16 59	2781	89 42 6	2769
4	Regulus	W.	69 3 28	2037	70 56 4	2030	72 48 51	2024	74 41 48	2018
	Mars	W.	47 52 53	2052	49 45 6	2045	51 37 30	2039	53 30 4	2033
	Antares	E.	32 4 46	2137	30 14 43	2143	28 24 50	2153	26 35 11	2167
	Saturn	E.	62 39 21	2021	60 46 20	2015	58 53 9	2008	56 59 47	2003
	α Aquilæ	E.	81 44 58	2746	80 9 19	2747	78 33 42	2750	76 58 9	2756
5	Regulus	W.	84 8 21	2001	86 1 53	2001	87 55 26	2000	89 49 1	2002
	Mars	W.	62 54 37	2018	64 47 43	2017	66 40 51	2017	68 33 59	2017
	Spica	W.	30 36 0	2109	32 26 46	2096	34 17 51	2086	36 9 12	2079
	Saturn	E.	47 31 18	1987	45 37 24	1986	43 43 28	1986	41 49 32	1987
	α Aquilæ	E.	69 3 29	2825	67 29 34	2848	65 56 9	2873	64 23 16	2903
6	Mars	W.	77 58 55	2033	79 51 37	2039	81 44 11	2045	83 36 35	2052
	Spica	W.	45 27 56	2066	47 19 48	2067	49 11 38	2063	51 3 25	2073
	α Aquilæ	E.	56 49 51	3113	55 21 57	3171	53 55 13	3234	52 29 44	3304
	Fomalhaut	E.	85 50 9	2192	84 1 30	2198	82 13 0	2206	80 24 41	2214
	α Pegasi	E.	102 47 19	2435	101 4 34	2433	99 21 47	2436	97 39 3	2431
7	Mars	W.	92 55 38	2096	94 46 45	2106	96 37 35	2117	98 28 8	2128
	Spica	W.	60 20 24	2104	62 11 17	2113	64 1 56	2122	65 52 21	2132
	Antares	W.	15 19 37	2471	17 1 31	2422	18 45 3	2356	20 29 41	2394
	Fomalhaut	E.	71 26 47	2272	69 40 7	2288	67 53 50	2304	66 7 57	2322
	α Pegasi	E.	89 6 59	2473	87 25 8	2485	85 43 33	2497	84 2 15	2511
8	Spica	W.	75 0 23	2190	76 49 5	2204	78 37 27	2216	80 25 30	2231
	Antares	W.	29 20 30	2274	31 7 8	2278	32 53 43	2280	34 40 12	2285
	Fomalhaut	E.	57 25 25	2428	55 42 30	2454	54 0 12	2480	52 18 31	2510
	α Pegasi	E.	75 41 13	2600	74 2 18	2622	72 23 53	2645	70 45 59	2639
	Sun	E.	130 21 17	2470	128 39 21	2484	126 57 45	2497	125 16 28	2512
9	Spica	W.	89 20 20	2305	91 6 12	2322	92 51 40	2337	94 36 46	2353
	Antares	W.	43 29 49	2334	45 14 59	2346	47 59 52	2359	48 44 26	2371
	Fomalhaut	E.	44 11 12	2690	42 24 19	2734	40 48 24	2783	39 13 34	2836
	α Pegasi	E.	62 45 21	2816	61 11 14	2850	59 37 51	2887	58 5 15	2936
	Sun	E.	116 55 20	2591	115 16 12	2607	113 37 26	2623	111 59 2	2640

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Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Venus	W.	104° 56′ 44″	2677	106° 33′ 55″	2660	108° 11′ 29″	2640	109° 49′ 29″	2621
	Jupiter	W.	94 54 4	2360	96 38 50	2338	98 24 1	2317	100 9 36	2296
	Pollux	W.	68 31 51	2310	70 17 36	2291	72 3 48	2274	73 50 25	2257
	Regulus	W.	32 36 46	2322	34 22 14	2303	36 8 9	2283	37 54 34	2264
	Antares	E.	68 12 28	2325	66 27 5	2309	64 41 19	2293	62 55 9	2277
	Saturn	E.	99 17 31	2286	97 31 10	2270	95 44 26	2252	93 57 16	2234
2	Jupiter	W.	109 3 44	2219	110 51 43	2205	112 40 3	2190	114 28 45	2177
	Pollux	W.	82 49 42	2177	84 38 44	2163	86 28 7	2149	88 17 52	2135
	Regulus	W.	46 53 21	2178	48 42 21	2163	50 31 44	2149	52 21 29	2134
	Antares	E.	53 58 46	2208	52 10 28	2196	50 21 53	2184	48 33 1	2172
	Saturn	E.	84 55 15	2156	83 5 41	2141	81 15 45	2128	79 25 29	2114
3	Regulus	W.	61 35 19	2073	63 26 59	2063	65 18 55	2054	67 11 5	2046
	Mars	W.	40 26 15	2088	42 17 32	2079	44 9 4	2068	46 0 52	2060
	Antares	E.	39 25 13	2137	37 35 10	2134	35 45 3	2133	33 54 54	2134
	Saturn	E.	70 9 15	2056	68 17 8	2046	66 24 46	2038	64 32 11	2028
	α Aquilæ	E.	88 6 58	2761	86 31 39	2754	84 56 11	2749	83 20 36	2747
4	Regulus	W.	76 34 54	2014	78 28 7	2009	80 21 27	2006	82 14 52	2003
	Mars	W.	55 22 47	2030	57 15 36	2025	59 8 32	2022	61 1 32	2019
	Antares	E.	24 45 54	2187	22 57 7	2214	21 9 0	2251	19 21 48	2301
	Saturn	E.	55 6 17	1999	53 12 41	1994	51 18 58	1991	49 25 10	1989
	α Aquilæ	E.	75 22 44	2766	73 47 31	2776	72 12 32	2788	70 37 49	2806
5	Regulus	W.	91 42 32	2009	93 36 3	2006	95 29 30	2007	97 22 53	2011
	Mars	W.	70 27 6	2019	72 20 10	2022	74 13 10	2025	76 6 5	2028
	Spica	W.	38 0 44	2073	39 52 25	2068	41 44 13	2067	43 36 3	2065
	Saturn	E.	39 55 38	1989	38 1 46	1991	36 7 58	1994	34 14 15	1998
	α Aquilæ	E.	62 51 1	2936	61 19 28	2973	59 48 42	3014	58 18 47	3062
6	Mars	W.	85 28 49	2059	87 20 51	2066	89 12 40	2075	91 4 17	2086
	Spica	W.	52 55 5	2077	54 46 39	2083	56 38 5	2090	58 29 19	2096
	α Aquilæ	E.	51 5 37	3362	49 43 0	3460	48 22 1	3565	47 2 48	3671
	Fomalhaut	E.	78 36 35	2224	76 48 43	2235	75 1 7	2245	73 13 47	2259
	α Pegasi	E.	95 56 22	2442	94 13 47	2448	92 31 20	2455	90 49 3	2464
7	Mars	W.	100 18 24	2141	102 8 20	2153	103 57 58	2167	105 47 16	2180
	Spica	W.	67 42 31	2143	69 32 25	2154	71 22 2	2164	73 11 22	2178
	Antares	W.	22 15 6	2301	24 1 4	2287	25 47 22	2279	27 33 53	2274
	Fomalhaut	E.	64 22 29	2340	62 37 28	2360	60 52 56	2381	59 8 54	2404
	α Pegasi	E.	82 21 17	2527	80 40 41	2543	79 0 27	2560	77 20 37	2579
8	Spica	W.	82 13 11	2245	84 0 31	2260	85 47 30	2275	87 34 6	2290
	Antares	W.	36 26 33	2294	38 12 42	2302	39 58 39	2311	41 44 22	2322
	Fomalhaut	E.	50 37 32	2540	48 57 15	2574	47 17 44	2610	45 39 2	2648
	α Pegasi	E.	69 8 38	2695	67 31 52	2723	65 55 43	2752	64 20 12	2782
	Sun	E.	123 35 32	2529	121 54 57	2543	120 14 43	2559	118 34 51	2574
9	Spica	W.	96 21 28	2369	98 5 47	2386	99 49 42	2402	101 33 14	2419
	Antares	W.	50 28 42	2385	52 12 38	2399	53 56 14	2412	55 39 32	2428
	Fomalhaut	E.	37 39 53	2894	36 7 27	2960	34 36 24	3032	33 6 51	3113
	α Pegasi	E.	56 33 29	2966	55 2 34	3009	53 32 33	3056	52 3 30	3105
	Sun	E.	110 21 2	2657	108 43 24	2674	107 6 9	2691	105 29 17	2707

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Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	Antares	W.	57° 22′ 27″	2441	59° 5′ 3″	2457	60° 47′ 17″	2471	62° 29′ 11″	2487
	Saturn	W.	26 9 54	2398	27 53 31	2414	29 36 46	2429	31 19 30	2443
	α Pegasi	E.	50 35 26	3159	49 8 28	3215	47 42 37	3276	46 17 57	3343
	Sun	E.	103 52 47	2725	102 16 41	2742	100 40 57	2759	99 5 35	2776
11	Antares	W.	70 53 25	2561	72 33 14	2575	74 12 43	2591	75 51 51	2604
	Saturn	W.	39 48 42	2521	41 29 26	2536	43 9 49	2551	44 49 52	2566
	α Pegasi	E.	39 35 38	3768	38 20 3	3882	37 6 25	4005	35 54 50	4143
	Sun	E.	91 14 21	2860	89 41 11	2877	88 8 22	2894	86 35 56	2909
12	Antares	W.	84 2 38	2675	85 39 51	2690	87 16 44	2703	88 53 20	2716
	Saturn	W.	53 5 5	2637	54 43 10	2651	56 20 56	2663	57 58 25	2677
	α Aquilæ	W.	45 55 24	4258	47 2 56	4186	48 11 35	4124	49 21 14	4068
	Sun	E.	78 58 42	2987	77 28 13	3002	75 58 3	3017	74 28 11	3032
13	Antares	W.	96 51 59	2780	98 26 53	2792	100 1 31	2805	101 35 53	2816
	Saturn	W.	66 1 27	2739	67 37 15	2752	69 12 46	2763	70 48 3	2774
	α Aquilæ	W.	55 21 30	3864	56 35 26	3835	57 49 52	3810	59 4 44	3787
	Sun	E.	67 3 15	3101	65 35 6	3113	64 7 12	3126	62 39 34	3138
14	Saturn	W.	78 40 51	2826	80 14 45	2836	81 48 26	2845	83 21 55	2855
	α Aquilæ	W.	65 24 9	3708	66 40 48	3698	67 57 37	3688	69 14 37	3681
	Fomalhaut	W.	29 45 46	3671	31 3 4	3609	32 21 29	3555	33 40 53	3510
	Sun	E.	55 25 0	3196	53 58 46	3208	52 32 46	3218	51 6 58	3228
15	Saturn	W.	91 6 28	2898	92 38 50	2904	94 11 4	2912	95 43 7	2920
	α Aquilæ	W.	75 41 10	3660	76 58 40	3658	78 16 12	3657	79 33 45	3658
	Fomalhaut	W.	40 28 19	3363	41 51 18	3345	43 14 38	3328	44 38 17	3313
	α Pegasi	W.	30 39 46	5154	31 34 42	4967	32 32 3	4806	33 31 34	4664
	Sun	E.	44 0 55	3276	42 36 16	3286	41 11 48	3294	39 47 30	3303
16	Saturn	W.	103 21 10	2953	104 52 22	2959	106 23 26	2965	107 54 22	2969
	Fomalhaut	W.	51 39 57	3269	53 4 45	3263	54 29 40	3256	55 54 43	3254
	α Pegasi	W.	38 55 23	4169	40 4 18	4102	41 14 18	4041	42 25 17	3986
	Sun	E.	32 48 28	3345	31 25 8	3353	30 1 58	3360	28 38 56	3370
21	Sun	W.	22 15 16	3474	23 36 9	3469	24 57 8	3464	26 18 12	3460
	Regulus	E.	65 51 28	3085	64 22 59	3083	62 54 29	3082	61 25 57	3081
	Mars	E.	89 24 23	3167	87 57 34	3166	86 30 44	3164	85 3 52	3164
22	Sun	W.	33 4 44	3438	34 26 17	3434	35 47 55	3430	37 9 38	3424
	Regulus	E.	54 2 52	3072	52 34 8	3069	51 5 21	3067	49 36 31	3065
	Mars	E.	77 49 10	3155	76 22 7	3153	74 55 1	3150	73 27 52	3147
	Spica	E.	108 3 26	3091	106 35 6	3087	105 6 41	3082	103 38 10	3080
23	Sun	W.	43 59 42	3397	45 22 2	3390	46 44 30	3383	48 7 6	3377
	Jupiter	W.	16 3 34	3102	17 31 41	3097	18 59 54	3090	20 28 16	3085
	Regulus	E.	42 11 25	3047	40 42 10	3044	39 12 52	3039	37 43 28	3035
	Mars	E.	66 11 4	3128	64 43 28	3123	63 15 46	3117	61 47 57	3113
	Spica	E.	96 14 23	3056	94 45 19	3051	93 16 9	3045	91 46 52	3039
24	Sun	W.	55 2 9	3337	56 25 38	3328	57 49 17	3318	59 13 8	3309
	Jupiter	W.	27 51 59	3049	29 21 11	3042	30 50 32	3033	32 20 4	3024
	Venus	W.	16 12 26	3419	17 34 21	3409	18 56 27	3398	20 18 46	3387
	Regulus	E.	30 15 10	3014	28 45 15	3011	27 15 16	3008	25 45 13	3005

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10	Antares	W.	64° 10′ 43″	2501	65° 51′ 55″	2516	67° 32′ 46″	2531	69° 13′ 16″	2546
	Saturn	W.	33 2 12	2460	34 44 22	2475	36 26 10	2491	38 7 36	2505
	α Pegasi	E.	44 54 35	3414	43 32 34	3491	42 12 0	3576	40 52 59	3668
	Sun	E.	97 30 36	2793	95 55 59	2811	94 21 45	2827	92 47 52	2844
11	Antares	W.	77 30 40	2620	79 9 8	2634	80 47 17	2648	82 25 7	2662
	Saturn	W.	46 29 34	2580	48 8 56	2595	49 47 58	2609	51 26 41	2623
	α Pegasi	E.	34 45 30	4297	33 38 35	4472	32 34 18	4669	31 32 52	4891
	Sun	E.	85 3 49	2925	83 32 2	2942	82 0 36	2957	80 29 29	2973
12	Antares	W.	90 29 38	2729	92 5 39	2744	93 41 21	2754	95 16 49	2768
	Saturn	W.	59 35 36	2690	61 12 29	2703	62 49 5	2716	64 25 24	2728
	α Aquilæ	W.	50 31 47	4015	51 43 12	3973	52 55 18	3931	54 8 6	3896
	Sun	E.	72 58 38	3046	71 29 22	3060	70 0 23	3073	68 31 41	3087
13	Antares	W.	103 10 0	2828	104 43 52	2838	106 17 30	2850	107 50 53	2861
	Saturn	W.	72 23 5	2785	73 57 52	2796	75 32 25	2806	77 6 45	2817
	α Aquilæ	W.	60 20 0	3768	61 35 36	3748	62 51 32	3734	64 7 43	3720
	Sun	E.	61 12 10	3151	59 55 2	3162	58 18 7	3174	56 51 27	3185
14	Saturn	W.	84 55 12	2863	86 28 18	2873	88 1 12	2881	89 33 55	2889
	α Aquilæ	W.	70 31 44	3674	71 48 59	3669	73 6 19	3665	74 23 43	3663
	Fomalhaut	W.	35 1 6	3471	36 22 2	3438	37 43 36	3408	39 5 44	3384
	Sun	E.	49 41 22	3238	48 15 58	3248	46 50 46	3257	45 25 44	3268
15	Saturn	W.	97 15 1	2927	98 46 46	2934	100 18 22	2940	101 49 50	2946
	α Aquilæ	W.	80 51 17	3659	82 8 48	3660	83 26 18	3663	84 43 44	3666
	Fomalhaut	W.	46 2 13	3302	47 26 22	3292	48 50 43	3282	50 15 15	3274
	α Pegasi	W.	34 33 4	4539	35 36 22	4429	36 41 17	4332	37 47 40	4246
	Sun	E.	38 23 22	3312	36 59 24	3320	35 35 36	3328	34 11 57	3337
16	Saturn	W.	109 25 13	2976	110 55 56	2981	112 26 33	2986	113 57 3	2991
	Fomalhaut	W.	57 19 48	3250	58 44 58	3247	60 10 12	3245	61 35 28	3242
	α Pegasi	W.	43 37 10	3938	44 49 51	3894	46 3 17	3855	47 17 23	3820
	Sun	E.	27 16 5	3378	25 53 23	3386	24 30 50	3395	23 8 28	3404
21	Sun	W.	27 39 21	3456	29 0 34	3452	30 21 52	3446	31 43 16	3443
	Regulus	E.	59 57 24	3079	58 28 49	3078	57 0 13	3075	55 31 33	3074
	Mars	E.	83 37 0	3163	82 10 6	3161	80 43 10	3158	79 16 11	3157
22	Sun	W.	38 31 27	3420	39 53 21	3414	41 15 22	3408	42 37 29	3403
	Regulus	E.	48 7 38	3061	46 38 41	3058	45 9 40	3054	43 40 34	3052
	Mars	E.	72 0 39	3143	70 33 22	3140	69 6 1	3135	67 38 34	3133
	Spica	E.	102 9 36	3075	100 40 56	3071	99 12 11	3066	97 43 20	3061
23	Sun	W.	49 29 49	3370	50 52 40	3362	52 15 40	3353	53 38 50	3345
	Jupiter	W.	21 56 44	3078	23 25 20	3072	24 54 4	3064	26 22 58	3058
	Regulus	E.	36 13 59	3031	34 44 25	3026	33 14 45	3023	31 45 1	3017
	Mars	E.	60 20 3	3107	58 52 2	3101	57 23 54	3095	55 55 38	3089
	Spica	E.	90 17 27	3032	88 47 54	3026	87 18 14	3019	85 48 25	3011
24	Sun	W.	60 37 9	3299	62 1 22	3288	63 25 48	3277	64 50 26	3267
	Jupiter	W.	33 49 47	3015	35 19 41	3005	36 49 47	2994	38 20 7	2985
	Venus	W.	21 41 17	3376	23 4 1	3365	24 26 58	3353	25 50 8	3341
	Regulus	E.	24 15 6	3003	22 44 57	3003	21 14 48	3004	19 44 40	3008

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24	Mars	E.	54° 27′ 15″	3082	52° 58′ 44″	3075	51° 30′ 4″	3068	50° 1′ 15″	3060
	Spica	E.	84 18 26	3004	82 48 18	2997	81 18 1	2989	79 47 34	2980
25	Sun	W.	66 15 16	3254	67 40 21	3242	69 5 40	3231	70 31 13	3218
	Jupiter	W.	39 50 38	2974	41 21 23	2964	42 52 21	2952	44 23 34	2940
	Venus	W.	27 13 32	3329	28 37 10	3316	30 1 3	3303	31 25 11	3291
	Mars	E.	42 34 45	3018	41 4 55	3010	39 34 55	3000	38 4 42	2992
	Spica	E.	72 12 32	2934	70 40 56	2924	69 9 7	2913	67 37 4	2903
26	Sun	W.	77 42 53	3148	79 10 4	3134	80 37 32	3119	82 5 19	3104
	Jupiter	W.	52 3 30	2876	53 36 19	2863	55 9 25	2849	56 42 49	2834
	Venus	W.	38 29 46	3220	39 55 32	3204	41 21 37	3188	42 48 0	3173
	Pollux	W.	30 57 55	2858	32 31 8	2840	34 4 44	2821	35 38 44	2804
	Spica	E.	59 53 22	2845	58 19 53	2833	56 46 8	2820	55 12 6	2806
	Antares	E.	105 46 52	2832	104 13 6	2818	102 39 2	2805	101 4 40	2790
27.	Sun	W.	89 29 5	3021	90 58 52	3003	92 29 1	2986	93 59 31	2968
	Jupiter	W.	64 34 44	2756	66 10 9	2741	67 45 55	2725	69 22 2	2707
	Venus	W.	50 4 49	3087	51 33 14	3070	53 2 0	3053	54 31 7	3034
	Pollux	W.	43 34 31	2716	45 10 50	2698	46 47 33	2680	48 24 40	2662
	Spica	E.	47 17 55	2745	45 42 15	2732	44 6 18	2719	42 30 4	2707
	Antares	E.	93 7 53	2713	91 31 30	2696	89 54 45	2681	88 17 40	2663
28	Sun	W.	101 37 49	2874	103 10 41	2856	104 43 56	2836	106 17 37	2817
	Jupiter	W.	77 28 25	2619	79 6 54	2602	80 45 46	2584	82 25 3	2566
	Venus	W.	62 2 35	2939	63 34 5	2920	65 5 59	2899	66 38 19	2880
	Pollux	W.	56 36 22	2570	58 15 58	2553	59 55 58	2533	61 36 25	2515
	Antares	E.	80 6 29	2578	78 27 4	2562	76 47 17	2543	75 7 4	2527
	Saturn	E.	110 12 38	2533	108 32 10	2515	106 51 17	2497	105 9 59	2479
29	Sun	W.	114 12 23	2719	115 48 38	2699	117 25 19	2680	119 2 26	2660
	Jupiter	W.	90 47 50	2473	92 29 41	2456	94 11 58	2436	95 54 41	2417
	Venus	W.	74 26 19	2780	76 1 13	2760	77 36 34	2741	79 12 20	2720
	Pollux	W.	70 5 9	2422	71 48 13	2403	73 31 44	2384	75 15 42	2366
	Regulus	W.	34 11 27	2435	35 54 12	2415	37 37 26	2395	39 21 8	2374
	Antares	E.	66 39 57	2438	64 57 17	2421	63 14 12	2405	61 30 44	2387
	Saturn	E.	96 37 7	2387	94 53 14	2370	93 8 56	2352	91 24 10	2334
30	Sun	W.	127 14 33	2565	128 54 16	2548	130 34 25	2530	132 14 57	2511
	Jupiter	W.	104 54 51	2327	106 20 11	2310	108 5 56	2292	109 52 7	2277
	Venus	W.	87 17 50	2623	88 56 15	2604	90 35 5	2585	92 14 20	2566
	Regulus	W.	48 6 49	2279	49 53 20	2261	51 40 17	2243	53 27 41	2225
	Mars	W.	22 24 8	2433	24 6 55	2407	25 50 20	2380	27 34 23	2357
	Antares	E.	52 47 24	2307	51 1 34	2293	49 15 24	2279	47 28 53	2264
	Saturn	E.	82 33 52	2244	80 46 30	2227	78 58 43	2210	77 10 31	2193
	α Aquilæ	E.	99 34 15	2986	98 3 45	2961	96 32 43	2938	95 1 12	2916
31	Venus	W.	100 36 45	2481	102 18 25	2466	104 0 26	2450	105 42 49	2436
	Regulus	W.	62 31 1	2144	64 20 53	2130	66 11 7	2115	68 1 43	2101
	Mars	W.	36 22 30	2258	38 9 32	2241	39 56 59	2225	41 44 49	2209
	Antares	E.	38 31 35	2210	36 43 22	2202	34 54 57	2197	33 6 25	2192
	Saturn	E.	68 3 23	2115	66 12 47	2101	64 21 50	2087	62 30 31	2074
	α Aquilæ	E.	87 17 45	2836	85 44 6	2826	84 10 14	2818	82 36 9	2811

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24	Mars	E.	48° 32′ 17″	3052	47° 3′ 9″	3044	45° 33′ 51″	3036	44° 4′ 23″	3028
	Spica	E.	78 16 56	2972	76 46 8	2963	75 15 7	2954	73 43 56	2943
25	Sun	W.	71 57 1	3205	73 23 4	3190	74 49 25	3178	76 16 1	3164
	Jupiter	W.	45 55 2	2929	47 26 44	2916	48 58 43	2902	50 30 59	2891
	Venus	W.	32 49 33	3276	34 14 12	3264	35 39 6	3248	37 4 18	3235
	Mars	E.	36 34 19	2968	35 3 44	2973	33 32 57	2964	32 1 59	2954
	Spica	E.	66 4 49	2891	64 32 19	2880	62 59 35	2869	61 26 36	2857
26	Sun	W.	83 33 24	3087	85 1 49	3071	86 30 34	3055	87 59 39	3038
	Jupiter	W.	58 16 33	2819	59 50 36	2805	61 24 58	2788	62 59 41	2773
	Venus	W.	44 14 42	3156	45 41 44	3140	47 9 5	3124	48 36 46	3105
	Pollux	W.	37 13 7	2786	38 47 53	2769	40 23 2	2750	41 58 35	2733
	Spica	E.	53 37 49	2796	52 3 16	2783	50 28 26	2770	48 53 19	2757
	Antares	E.	99 29 59	2775	97 54 58	2760	96 19 37	2744	94 43 55	2729
27	Sun	W.	95 30 24	2949	97 1 41	2931	98 33 20	2912	100 5 23	2894
	Jupiter	W.	70 58 33	2690	72 35 26	2673	74 12 42	2656	75 50 21	2638
	Venus	W.	56 0 38	3015	57 30 32	2996	59 0 50	2978	60 31 30	2958
	Pollux	W.	50 2 11	2643	51 40 7	2626	53 18 27	2607	54 57 12	2589
	Spica	E.	40 53 34	2696	39 16 49	2684	37 39 48	2675	36 2 33	2664
	Antares	E.	86 40 11	2647	85 2 20	2630	83 24 6	2614	81 45 30	2596
28	Sun	W.	107 51 43	2797	109 26 15	2779	111 1 11	2757	112 36 35	2739
	Jupiter	W.	84 4 45	2547	85 44 53	2529	87 25 26	2510	89 6 26	2492
	Venus	W.	68 11 3	2860	69 44 13	2840	71 17 49	2820	72 51 51	2800
	Pollux	W.	63 17 17	2496	64 58 36	2478	66 40 20	2458	68 22 32	2441
	Antares	E.	73 26 28	2509	71 45 27	2492	70 4 2	2473	68 22 11	2457
	Saturn	E.	103 28 16	2460	101 46 7	2443	100 3 33	2424	98 20 32	2407
29	Sun	W.	120 39 59	2640	122 17 59	2621	123 56 25	2603	125 35 16	2584
	Jupiter	W.	97 37 51	2400	99 21 26	2380	101 5 29	2364	102 49 56	2344
	Venus	W.	80 48 33	2700	82 25 13	2680	84 2 20	2661	85 39 52	2642
	Pollux	W.	77 0 5	2347	78 44 56	2330	80 30 12	2311	82 15 56	2293
	Regulus	W.	41 5 20	2355	42 50 0	2335	44 35 9	2316	46 20 45	2297
	Antares	E.	59 46 51	2371	58 2 34	2355	56 17 54	2339	54 32 51	2322
	Saturn	E.	89 39 0	2314	87 53 21	2297	86 7 17	2280	84 20 48	2262
30	Sun	W.	133 55 55	2493	135 37 18	2477	137 19 3	2460	139 1 13	2444
	Jupiter	W.	111 38 41	2259	113 25 41	2243	115 13 4	2227	117 0 52	2211
	Venus	W.	93 54 1	2548	95 34 7	2532	97 14 36	2515	98 55 29	2498
	Regulus	W.	55 15 31	2208	57 3 47	2191	58 52 28	2175	60 41 33	2160
	Mars	W.	29 19 0	2335	31 4 8	2314	32 49 47	2294	34 35 55	2276
	Antares	E.	45 42 1	2251	43 54 50	2239	42 7 21	2229	40 19 36	2218
	Saturn	E.	75 21 53	2177	73 32 51	2161	71 43 25	2146	69 53 36	2130
	α Aquilæ	E.	93 29 14	2898	91 56 52	2881	90 24 9	2866	88 51 6	2852
31	Venus	W.	107 25 32	2422	109 8 36	2409	110 51 58	2396	112 35 38	2383
	Regulus	W.	69 52 40	2088	71 43 57	2075	73 35 34	2064	75 27 28	2052
	Mars	W.	43 33 3	2195	45 21 38	2180	47 10 35	2169	48 59 50	2156
	Antares	E.	31 17 46	2191	29 29 5	2193	27 40 27	2198	25 51 57	2208
	Saturn	E.	60 38 52	2061	58 56 53	2049	56 54 35	2037	55 1 59	2026
	α Aquilæ	E.	81 1 56	2806	79 27 36	2801	77 53 9	2801	76 18 42	2802

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from* / *added to* *Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Thur.	1	4 35 34.30	10.224	N.22 2 14.8	+20.58	15 48.38	68.41	2 32.05	0.367
Frid.	2	4 39 39.86	10.240	22 10 17.4	19.62	15 48.25	68.47	2 23.07	0.383
Sat.	3	4 43 45.81	10.256	22 17 56.7	18.65	15 48.13	68.52	2 13.71	0.399
Sun.	4	4 47 52.13	10.271	22 25 12.6	17.67	15 48.00	68.57	2 3.98	0.414
Mon.	5	4 51 58.81	10.286	22 32 5.1	16.69	15 47.88	68.61	1 53.88	0.429
Tues.	6	4 56 5.83	10.300	22 38 34.0	15.70	15 47.76	68.66	1 43.43	0.443
Wed.	7	5 0 13.19	10.313	22 44 39.2	14.71	15 47.63	68.70	1 32.65	0.456
Thur.	8	5 4 20.88	10.325	22 50 20.6	13.71	15 47.52	68.74	1 21.56	0.468
Frid.	9	5 8 28.86	10.338	22 55 38.0	12.71	15 47.41	68.77	1 10.17	0.480
Sat.	10	5 12 37.11	10.348	23 0 31.1	11.70	15 47.31	68.81	0 58.51	0.491
Sun.	11	5 16 45.60	10.359	23 5 0.0	10.69	15 47.21	68.84	0 46.61	0.502
Mon.	12	5 20 54.34	10.368	23 9 4.6	9.68	15 47.11	68.88	0 34.47	0.511
Tues.	13	5 25 3.29	10.377	23 12 44.8	8.67	15 47.01	68.90	0 22.11	0.520
Wed.	14	5 29 12.42	10.384	23 16 0.5	7.65	15 46.92	68.92	0 9.56	0.527
Thur.	15	5 33 21.72	10.390	23 18 51.7	6.62	15 46.84	68.94	0 3.14	0.533
Frid.	16	5 37 31.16	10.396	23 21 18.2	5.59	15 46.75	68.95	0 15.97	0.538
Sat.	17	5 41 40.70	10.399	23 23 20.0	4.56	15 46.68	68.96	0 28.95	0.542
Sun.	18	5 45 50.32	10.401	23 24 57.0	3.53	15 46.62	68.97	0 41.96	0.544
Mon.	19	5 49 59.98	10.402	23 26 9.2	2.49	15 46.56	68.98	0 55.04	0.545
Tues.	20	5 54 9.68	10.402	23 26 56.6	1.46	15 46.50	68.98	1 8.14	0.545
Wed.	21	5 58 19.38	10.401	23 27 19.2	+ 0.42	15 46.45	68.98	1 21.24	0.544
Thur.	22	6 2 29.05	10.400	23 27 16.9	− 0.61	15 46.41	68.98	1 34.32	0.543
Frid.	23	6 6 38.66	10.397	23 26 49.8	1.64	15 46.37	68.97	1 47.34	0.540
Sat.	24	6 10 48.19	10.393	23 25 57.8	2.68	15 46.34	68.96	2 0.27	0.536
Sun.	25	6 14 57.62	10.388	23 24 41.0	3.71	15 46.31	68.94	2 13.10	0.531
Mon.	26	6 19 6.90	10.382	23 22 59.5	4.74	15 46.27	68.92	2 25.79	0.525
Tues.	27	6 23 16.01	10.376	23 20 53.3	5.78	15 46.25	68.90	2 38.32	0.519
Wed.	28	6 27 24.96	10.368	23 18 22.5	6.80	15 46.23	68.89	2 50.68	0.511
Thur.	29	6 31 33.73	10.360	23 15 27.1	7.82	15 46.22	68.86	3 2.85	0.503
Frid.	30	6 35 42.27	10.350	23 12 7.3	8.84	15 46.21	68.83	3 14.80	0.493
Sat.	31	6 39 50.56	10.340	N.23 8 23.1	− 9.85	15 46.20	68.80	3 26.50	0.483

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be added to* / *subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time, or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Thur.	1	4 35 34.72	10.223	N.22 2 15.7	+20.58	2 32.04	0.367	4 38 6.76
Frid.	2	4 39 40.26	10.239	22 10 18.1	19.62	2 23.05	0.383	4 42 3.31
Sat.	3	4 43 46.18	10.255	22 17 57.3	18.65	2 13.69	0.399	4 45 59.87
Sun.	4	4 47 52.47	10.270	22 25 13.2	17.67	2 3.96	0.414	4 49 56.43
Mon.	5	4 51 59.12	10.285	22 32 5.6	16.69	1 53.86	0.429	4 53 52.98
Tues.	6	4 56 6.12	10.299	22 38 34.5	15.70	1 43.42	0.443	4 57 49.54
Wed.	7	5 0 13.15	10.312	22 44 39.6	14.71	1 32.65	0.456	5 1 46.10
Thur.	8	5 4 21.10	10.324	22 50 20.9	13.71	1 21.55	0.468	5 5 42.65
Frid.	9	5 8 29.05	10.337	22 55 38.2	12.71	1 10.16	0.480	5 9 39.21
Sat.	10	5 12 37.27	10.347	23 0 31.3	11.70	0 58.50	0.491	5 13 35.77
Sun.	11	5 16 45.73	10.358	23 5 0.1	10.69	0 46.60	0.502	5 17 32.33
Mon.	12	5 20 54.43	10.367	23 9 4.6	9.68	0 34.46	0.511	5 21 28.89
Tues.	13	5 25 3.34	10.376	23 12 44.8	8.67	0 22.11	0.520	5 25 25.45
Wed.	14	5 29 12.44	10.383	23 16 0.6	7.65	0 9.56	0.527	5 29 22.00
Thur.	15	5 33 21.70	10.389	23 18 51.7	6.62	0 3.14	0.533	5 33 18.56
Frid.	16	5 37 31.10	10.395	23 21 18.2	5.59	0 15.97	0.538	5 37 15.13
Sat.	17	5 41 40.61	10.398	23 23 20.0	4.56	0 28.93	0.542	5 41 11.68
Sun.	18	5 45 50.19	10.400	23 24 57.0	3.53	0 41.95	0.544	5 45 8.24
Mon.	19	5 49 59.82	10.401	23 26 9.2	2.49	0 55.03	0.545	5 49 4.79
Tues.	20	5 54 9.48	10.401	23 26 56.6	1.46	1 8.13	0.545	5 53 1.35
Wed.	21	5 58 19.14	10.400	23 27 19.2	+ 0.42	1 21.23	0.544	5 56 57.91
Thur.	22	6 2 28.77	10.399	23 27 16.9	− 0.61	1 34.30	0.543	6 0 54.47
Frid.	23	6 6 38.34	10.396	23 26 49.8	1.64	1 47.31	0.540	6 4 51.03
Sat.	24	6 10 47.83	10.392	23 25 57.9	2.68	2 0.25	0.536	6 8 47.58
Sun.	25	6 14 57.22	10.387	23 24 41.2	3.71	2 13.08	0.531	6 12 44.14
Mon.	26	6 19 6.47	10.381	23 22 59.7	4.74	2 25.77	0.525	6 16 40.70
Tues.	27	6 23 15.55	10.375	23 20 53.6	5.78	2 38.29	0.519	6 20 37.26
Wed.	28	6 27 24.46	10.367	23 18 22.9	6.80	2 50.64	0.510	6 24 33.82
Thur.	29	6 31 33.19	10.359	23 15 27.6	7.82	3 2.82	0.503	6 28 30.37
Frid.	30	6 35 41.70	10.349	23 12 7.8	8.84	3 14.77	0.493	6 32 26.93
Sat.	31	6 39 49.96	10.339	N.23 8 23.7	− 9.85	3 26.47	0.483	6 36 23.49

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour +9ˢ.8565

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
1	152	70° 30′ 26″.8	30′ 24″.1	143″.62	+0″.48	0.0061884	+25.4	19h 18m 42s.89
2	153	71 27 53.1	27 50.2	143.58	0.38	.0062487	24.9	19 14 46.98
3	154	72 25 18.4	25 15.3	143.54	0.26	.0063079	24.4	19 10 51.07
4	155	73 22 42.8	22 39.5	143.50	+0.12	.0063658	23.9	19 6 55.16
5	156	74 20 6.3	20 2.9	143.47	−0.01	.0064224	23.3	19 2 59.25
6	157	75 17 29.1	17 25.5	143.44	0.14	.0064777	22.7	18 59 3.34
7	158	76 14 51.3	14 47.5	143.41	0.25	.0065316	22.1	18 55 7.43
8	159	77 12 12.8	12 8.8	143.38	0.35	.0065841	21.5	18 51 11.52
9	160	78 9 33.8	9 29.6	143.36	0.42	.0066351	20.8	18 47 15.60
10	161	79 6 54.3	6 50.0	143.34	0.47	.0066843	20.0	18 43 19.69
11	162	80 4 14.4	4 9.9	143.33	0.49	.0067316	19.2	18 39 23.78
12	163	81 1 34.1	1 29.4	143.31	0.47	.0067769	18.4	18 35 27.87
13	164	81 58 53.4	58 48.5	143.30	0.42	.0068201	17.5	18 31 31.96
14	165	82 56 12.3	56 7.2	143.28	0.34	.0068609	16.5	18 27 36.05
15	166	83 53 30.8	53 25.6	143.26	0.25	.0068992	15.5	18 23 40.14
16	167	84 50 48.9	50 43.5	143.24	0.13	.0069351	14.5	18 19 44.23
17	168	85 48 6.5	48 0.9	143.22	−0.01	.0069685	13.4	18 15 48.31
18	169	86 45 23.6	45 17.8	143.20	+0.13	.0069992	12.3	18 11 52.39
19	170	87 42 40.2	42 34.2	143.18	0.26	.0070273	11.2	18 7 56.48
20	171	88 39 56.4	39 50.2	143.16	0.39	.0070528	10.3	18 4 0.57
21	172	89 37 12.0	37 5.7	143.14	0.50	.0070760	9.3	18 0 4.65
22	173	90 34 27.1	34 20.6	143.12	0.60	.0070964	8.4	17 56 8.74
23	174	91 31 41.6	31 34.9	143.09	0.67	.0071147	7.3	17 52 12.83
24	175	92 28 55.5	28 48.6	143.07	0.69	.0071307	6.3	17 48 16.92
25	176	93 26 8.8	26 1.7	143.04	0.68	.0071445	5.4	17 44 21.01
26	177	94 23 21.5	23 14.3	143.02	0.65	.0071562	4.6	17 40 25.10
27	178	95 20 33.8	20 26.4	143.00	0.59	.0071661	3.8	17 36 29.19
28	179	96 17 45.6	17 38.0	142.98	0.51	.0071743	3.1	17 32 33.28
29	180	97 14 57.0	14 49.8	142.97	0.42	.0071808	2.4	17 28 37.36
30	181	98 12 8.2	12 0.8	142.96	0.30	.0071858	1.8	17 24 41.45
31	182	99 9 19.2	9 11.2	142.95	+0.17	0.0071892	+ 1.1	17 20 45.54

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour $-9^s.8296$

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 37.6	16 41.5	60 54.7	+1.37	61 9.0	+1.02	10 42.3	2.40	13.1
2	16 44.2	16 45.5	61 18.9	+0.62	61 23.9	+0.21	11 42.0	2.57	14.1
3	16 45.5	16 44.2	61 24.0	−0.21	61 18.9	−0.63	12 45.0	2.68	15.1
4	16 41.5	16 37.5	61 9.0	1.02	60 54.6	1.38	13 49.5	2.68	16.1
5	16 32.5	16 26.6	60 36.1	1.68	60 14.4	1.94	14 53.0	2.58	17.1
6	16 19.9	16 12.7	59 49.9	2.13	59 23.4	2.27	15 52.8	2.40	18.1
7	16 5.1	15 57.4	58 55.6	2.35	58 27.2	2.38	16 48.0	2.20	19.1
8	15 49.7	15 42.1	57 58.7	2.35	57 30.8	2.29	17 38.7	2.02	20.1
9	15 34.7	15 27.8	57 4.0	2.19	56 38.3	2.07	18 25.4	1.88	21.1
10	15 21.2	15 15.2	56 14.3	1.93	55 52.1	1.77	19 9.5	1.79	22.1
11	15 9.7	15 4.7	55 31.8	1.61	55 13.6	1.44	19 51.8	1.75	23.1
12	15 0.3	14 56.4	54 57.3	1.26	54 43.2	1.09	20 33.7	1.75	24.1
13	14 53.1	14 50.4	54 31.1	0.93	54 21.0	0.76	21 16.0	1.78	25.1
14	14 48.1	14 46.4	54 12.7	0.61	54 6.4	0.46	21 59.4	1.84	26.1
15	14 45.1	14 44.3	54 1.7	0.32	53 58.8	−0.18	22 44.5	1.92	27.1
16	14 43.9	14 43.9	53 57.3	−0.06	53 57.3	+0.06	23 31.4	2.00	28.1
17	14 44.3	14 45.0	53 58.7	+0.17	54 1.4	0.28	☌		29.1
18	14 46.1	14 47.5	54 5.3	0.38	54 10.6	0.49	0 20.1	2.06	0.4
19	14 49.3	14 51.4	54 17.1	0.60	54 24.9	0.71	1 10.0	2.09	1.4
20	14 53.9	14 56.8	54 34.0	0.82	54 44.5	0.93	2 0.2	2.09	2.4
21	15 0.0	15 3.7	54 56.4	1.05	55 9.7	1.17	2 49.9	2.05	3.4
22	15 7.7	15 12.1	55 24.6	1.30	55 40.9	1.42	3 38.5	2.00	4.4
23	15 17.0	15 22.2	55 58.6	1.54	56 17.9	1.66	4 26.0	1.96	5.4
24	15 27.8	15 33.8	56 38.5	1.78	57 0.5	1.88	5 12.7	1.93	6.4
25	15 40.1	15 46.6	57 23.6	1.97	57 47.6	2.04	5 59.1	1.94	7.4
26	15 53.4	16 0.2	58 12.3	2.08	58 37.3	2.08	6 46.3	2.00	8.4
27	16 7.0	16 13.6	59 2.2	2.05	59 26.5	1.98	7 35.3	2.10	9.4
28	16 19.8	16 25.6	59 49.5	1.85	60 10.7	1.68	8 27.4	2.25	10.4
29	16 30.7	16 35.0	60 29.5	1.45	60 45.2	1.16	9 23.4	2.41	11.4
30	16 38.3	16 40.5	60 57.3	0.84	61 5.3	+0.49	10 23.7	2.60	12.4
31	16 41.4	16 41.2	61 9.0	+0.11	61 8.0	−0.28	11 27.4	2.70	13.4

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 56 5.00	2.4071	S. 12 51 29.5	13.054
1	14 58 29.60	2.4132	13 4 30.6	12.982
2	15 0 54.57	2.4193	13 17 27.3	12.907
3	15 3 19.91	2.4255	13 30 19.5	12.830
4	15 5 45.62	2.4317	13 43 7.0	12.751
5	15 8 11.71	2.4379	13 55 49.6	12.671
6	15 10 38.17	2.4442	14 8 27.3	12.589
7	15 13 5.01	2.4504	14 21 0.0	12.505
8	15 15 32.22	2.4566	14 33 27.7	12.418
9	15 17 59.80	2.4628	14 45 50.1	12.328
10	15 20 27.76	2.4691	14 58 7.1	12.237
11	15 22 56.10	2.4753	15 10 18.4	12.144
12	15 25 24.82	2.4816	15 22 24.3	12.049
13	15 27 53.91	2.4879	15 34 24.4	11.953
14	15 30 23.37	2.4941	15 46 18.6	11.854
15	15 32 53.20	2.5004	15 58 6.8	11.753
16	15 35 23.40	2.5066	16 9 48.9	11.651
17	15 37 53.98	2.5128	16 21 24.8	11.547
18	15 40 24.94	2.5190	16 32 54.4	11.440
19	15 42 56.27	2.5252	16 44 17.5	11.332
20	15 45 27.97	2.5313	16 55 34.0	11.221
21	15 48 0.03	2.5375	17 6 43.8	11.108
22	15 50 32.46	2.5436	17 17 46.8	10.994
23	15 53 5.26	2.5497	S. 17 28 42.9	10.878

FRIDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 55 38.42	2.5557	S. 17 39 32.1	10.760
1	15 58 11.94	2.5617	17 50 14.2	10.640
2	16 0 45.82	2.5677	18 0 49.0	10.516
3	16 3 20.06	2.5736	18 11 16.3	10.391
4	16 5 54.65	2.5794	18 21 36.0	10.264
5	16 8 29.59	2.5852	18 31 48.0	10.136
6	16 11 4.88	2.5910	18 41 52.2	10.006
7	16 13 40.52	2.5967	18 51 48.5	9.875
8	16 16 16.50	2.6023	19 1 36.8	9.741
9	16 18 52.82	2.6079	19 11 17.1	9.606
10	16 21 29.46	2.6135	19 20 49.3	9.469
11	16 24 6.43	2.6189	19 30 13.2	9.330
12	16 26 43.73	2.6243	19 39 28.7	9.189
13	16 29 21.36	2.6296	19 48 35.8	9.046
14	16 31 59.30	2.6348	19 57 34.4	8.902
15	16 34 37.55	2.6399	20 6 24.2	8.756
16	16 37 16.10	2.6449	20 15 5.2	8.608
17	16 39 54.95	2.6499	20 23 37.2	8.459
18	16 42 34.10	2.6548	20 32 0.2	8.308
19	16 45 13.54	2.6595	20 40 14.2	8.156
20	16 47 53.26	2.6642	20 48 19.1	8.003
21	16 50 33.24	2.6687	20 56 14.7	7.848
22	16 53 13.49	2.6732	21 4 0.9	7.691
23	16 55 54.01	2.6775	21 11 37.7	7.533
24	16 58 34.78	2.6817	S. 21 19 5.0	7.373

SATURDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 58 34.78	2.6817	S. 21 19 5.0	7.373
1	17 1 15.81	2.6858	21 26 22.6	7.213
2	17 3 57.08	2.6898	21 33 30.5	7.051
3	17 6 38.59	2.6936	21 40 28.6	6.888
4	17 9 20.33	2.6974	21 47 16.9	6.724
5	17 12 2.29	2.7010	21 53 55.3	6.558
6	17 14 44.46	2.7044	22 0 23.7	6.391
7	17 17 26.84	2.7077	22 6 42.1	6.223
8	17 20 9.41	2.7109	22 12 50.4	6.054
9	17 22 52.17	2.7139	22 18 48.5	5.883
10	17 25 35.10	2.7169	22 24 36.3	5.712
11	17 28 18.20	2.7197	22 30 13.8	5.539
12	17 31 1.46	2.7223	22 35 40.9	5.366
13	17 33 44.88	2.7248	22 40 57.6	5.191
14	17 36 28.45	2.7271	22 46 3.8	5.016
15	17 39 12.15	2.7292	22 50 59.4	4.839
16	17 41 55.97	2.7313	22 55 44.4	4.663
17	17 44 39.91	2.7331	23 0 18.8	4.485
18	17 47 23.96	2.7348	23 4 42.5	4.307
19	17 50 8.10	2.7363	23 8 55.5	4.128
20	17 52 52.32	2.7376	23 12 57.8	3.949
21	17 55 36.62	2.7387	23 16 49.3	3.768
22	17 58 20.98	2.7398	23 20 30.0	3.588
23	18 1 5.40	2.7407	S. 23 23 59.9	3.407

SUNDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 3 49.87	2.7414	S. 23 27 18.9	3.226
1	18 6 34.38	2.7419	23 30 27.0	3.044
2	18 9 18.92	2.7422	23 33 24.2	2.862
3	18 12 3.48	2.7424	23 36 10.5	2.680
4	18 14 48.04	2.7424	23 38 45.8	2.498
5	18 17 32.59	2.7422	23 41 10.2	2.316
6	18 20 17.12	2.7419	23 43 23.7	2.134
7	18 23 1.62	2.7414	23 45 26.3	1.952
8	18 25 46.09	2.7407	23 47 17.9	1.770
9	18 28 30.51	2.7398	23 48 58.6	1.587
10	18 31 14.87	2.7388	23 50 28.3	1.405
11	18 33 59.17	2.7376	23 51 47.0	1.222
12	18 36 43.39	2.7363	23 52 54.7	1.040
13	18 39 27.53	2.7347	23 53 51.5	0.857
14	18 42 11.58	2.7330	23 54 37.4	0.675
15	18 44 55.52	2.7310	23 55 12.4	0.493
16	18 47 39.33	2.7290	23 55 36.5	0.313
17	18 50 23.01	2.7267	23 55 49.8	−0.133
18	18 53 6.55	2.7243	23 55 52.3	+0.047
19	18 55 49.94	2.7217	23 55 44.0	0.227
20	18 58 33.17	2.7190	23 55 25.0	0.406
21	19 1 16.22	2.7161	23 54 55.2	0.565
22	19 3 59.10	2.7131	23 54 14.7	0.763
23	19 6 41.79	2.7098	23 53 23.6	0.940
24	19 9 24.29	2.7065	S. 23 52 21.9	1.116

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 9 24.29	2.7065	S. 23 52 21.9	1.116
1	19 12 6.58	2.7030	23 51 9.6	1.292
2	19 14 48.65	2.6993	23 49 46.8	1.467
3	19 17 30.50	2.6955	23 48 13.5	1.642
4	19 20 12.12	2.6915	23 46 29.8	1.816
5	19 22 53.50	2.6874	23 44 35.7	1.988
6	19 25 34.62	2.6832	23 42 31.3	2.160
7	19 28 15.48	2.6788	23 40 16.6	2.331
8	19 30 56.07	2.6742	23 37 51.6	2.501
9	19 33 36.39	2.6695	23 35 16.4	2.669
10	19 36 16.42	2.6647	23 32 31.1	2.836
11	19 38 56.15	2.6597	23 29 35.8	3.002
12	19 41 35.58	2.6546	23 26 30.6	3.168
13	19 44 14.71	2.6494	23 23 15.5	3.332
14	19 46 53.52	2.6440	23 19 50.6	3.495
15	19 49 32.01	2.6386	23 16 16.0	3.657
16	19 52 10.17	2.6330	23 12 31.7	3.817
17	19 54 47.99	2.6273	23 8 37.9	3.975
18	19 57 25.46	2.6215	23 4 34.6	4.132
19	20 0 2.58	2.6157	23 0 22.0	4.288
20	20 2 39.34	2.6097	22 56 0.0	4.444
21	20 5 15.74	2.6036	22 51 28.7	4.598
22	20 7 51.77	2.5974	22 46 48.2	4.751
23	20 10 27.42	2.5911	S. 22 41 58.6	4.902

TUESDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 13 2.69	2.5848	S. 22 37 0.0	5.051
1	20 15 37.59	2.5783	22 31 52.5	5.199
2	20 18 12.10	2.5717	22 26 36.2	5.345
3	20 20 46.21	2.5651	22 21 11.2	5.490
4	20 23 19.92	2.5584	22 15 37.5	5.634
5	20 25 53.23	2.5516	22 9 55.2	5.777
6	20 28 26.13	2.5448	22 4 4.4	5.918
7	20 30 58.61	2.5379	21 58 5.1	6.057
8	20 33 30.67	2.5309	21 51 57.5	6.194
9	20 36 2.31	2.5239	21 45 41.7	6.330
10	20 38 33.53	2.5168	21 39 17.8	6.464
11	20 41 4.32	2.5097	21 32 45.9	6.597
12	20 43 34.68	2.5025	21 26 6.1	6.728
13	20 46 4.61	2.4953	21 19 18.5	6.857
14	20 48 34.11	2.4880	21 12 23.2	6.985
15	20 51 3.17	2.4807	21 5 20.3	7.111
16	20 53 31.79	2.4733	20 58 9.8	7.236
17	20 55 59.97	2.4659	20 50 51.9	7.359
18	20 58 27.71	2.4585	20 43 26.7	7.480
19	21 0 55.00	2.4511	20 35 54.3	7.599
20	21 3 21.84	2.4437	20 28 14.7	7.717
21	21 5 48.24	2.4362	20 20 28.1	7.833
22	21 8 14.19	2.4287	20 12 34.6	7.948
23	21 10 39.68	2.4212	20 4 34.2	8.061
24	21 13 4.72	2.4137	S. 19 56 27.0	8.172

WEDNESDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 13 4.72	2.4137	S. 19 56 27.0	8.172
1	21 15 29.31	2.4062	19 48 13.2	8.283
2	21 17 53.45	2.3986	19 39 52.8	8.391
3	21 20 17.14	2.3911	19 31 26.0	8.498
4	21 22 40.38	2.3835	19 22 52.8	8.603
5	21 25 3.17	2.3759	19 14 13.4	8.706
6	21 27 25.51	2.3684	19 5 27.8	8.808
7	21 29 47.39	2.3608	18 56 36.2	8.908
8	21 32 8.81	2.3533	18 47 38.6	9.007
9	21 34 29.78	2.3458	18 38 35.2	9.105
10	21 36 50.31	2.3384	18 29 26.0	9.201
11	21 39 10.39	2.3309	18 20 11.1	9.295
12	21 41 30.02	2.3235	18 10 50.6	9.387
13	21 43 49.20	2.3160	18 1 24.5	9.478
14	21 46 7.93	2.3086	17 51 53.0	9.566
15	21 48 26.23	2.3012	17 42 16.3	9.653
16	21 50 44.08	2.2938	17 32 34.4	9.739
17	21 53 1.49	2.2865	17 22 47.4	9.823
18	21 55 18.46	2.2793	17 12 55.4	9.906
19	21 57 35.00	2.2720	17 2 58.5	9.988
20	21 59 51.10	2.2648	16 52 56.7	10.068
21	22 2 6.77	2.2576	16 42 50.2	10.146
22	22 4 22.01	2.2505	16 32 39.1	10.223
23	22 6 36.83	2.2434	S. 16 22 23.5	10.298

THURSDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 8 51.22	2.2363	S. 16 12 3.4	10.372
1	22 11 5.18	2.2293	16 1 38.9	10.445
2	22 13 18.72	2.2223	15 51 10.1	10.517
3	22 15 31.84	2.2153	15 40 37.0	10.587
4	22 17 44.55	2.2084	15 29 59.8	10.655
5	22 19 56.85	2.2016	15 19 18.5	10.722
6	22 22 8.74	2.1948	15 8 33.2	10.788
7	22 24 20.23	2.1880	14 57 44.0	10.852
8	22 26 31.31	2.1813	14 46 51.0	10.914
9	22 28 41.99	2.1747	14 35 54.3	10.975
10	22 30 52.28	2.1682	14 24 54.0	11.035
11	22 33 2.18	2.1617	14 13 50.2	11.093
12	22 35 11.69	2.1552	14 2 42.9	11.150
13	22 37 20.81	2.1488	13 51 32.2	11.206
14	22 39 29.54	2.1425	13 40 18.2	11.260
15	22 41 37.89	2.1362	13 29 1.0	11.313
16	22 43 45.87	2.1300	13 17 40.7	11.365
17	22 45 53.49	2.1238	13 6 17.3	11.415
18	22 48 0.74	2.1177	12 54 50.9	11.464
19	22 50 7.62	2.1117	12 43 21.6	11.512
20	22 52 14.14	2.1057	12 31 49.5	11.559
21	22 54 20.31	2.0999	12 20 14.6	11.605
22	22 56 26.13	2.0941	12 8 37.0	11.650
23	22 58 31.61	2.0883	11 56 56.7	11.694
24	23 0 36.74	2.0826	S. 11 45 13.9	11.736

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 9.					**SUNDAY 11.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	23 0 36.74	2.0826	S. 11 45 13.9	11.736	0	0 35 22.15	1.8937	S. 1 53 39.7	12.556
1	23 2 41.54	2.0770	11 33 28.6	11.777	1	0 37 15.69	1.8915	1 41 6.4	12.552
2	23 4 46.00	2.0714	11 21 40.9	11.816	2	0 39 9.10	1.8893	1 28 33.4	12.547
3	23 6 50.12	2.0659	11 9 50.9	11.853	3	0 41 2.40	1.8873	1 16 0.8	12.541
4	23 8 53.90	2.0605	10 57 58.6	11.890	4	0 42 55.58	1.8854	1 3 28.6	12.535
5	23 10 57.36	2.0551	10 46 4.1	11.926	5	0 44 48.65	1.8836	0 50 56.8	12.528
6	23 13 0.50	2.0498	10 34 7.5	11.961	6	0 46 41.61	1.8818	0 38 25.4	12.520
7	23 15 3.32	2.0446	10 22 8.8	11.995	7	0 48 34.46	1.8800	0 25 54.5	12.511
8	23 17 5.84	2.0395	10 10 8.0	12.028	8	0 50 27.21	1.8783	0 13 24.1	12.502
9	23 19 8.06	2.0345	9 58 5.3	12.060	9	0 52 19.86	1.8767	S. 0 0 54.3	12.492
10	23 21 9.98	2.0295	9 46 0.7	12.090	10	0 54 12.41	1.8752	N. 0 11 34.8	12.482
11	23 23 11.60	2.0246	9 33 54.3	12.120	11	0 56 4.88	1.8737	0 24 3.3	12.471
12	23 25 12.92	2.0197	9 21 46.1	12.149	12	0 57 57.26	1.8723	0 36 31.2	12.459
13	23 27 13.95	2.0149	9 9 36.2	12.177	13	0 59 49.56	1.8710	0 48 58.3	12.446
14	23 29 14.69	2.0102	8 57 24.7	12.204	14	1 1 41.78	1.8697	1 1 24.6	12.432
15	23 31 15.15	2.0056	8 45 11.7	12.229	15	1 3 33.92	1.8685	1 13 50.1	12.418
16	23 33 15.34	2.0010	8 32 57.2	12.252	16	1 5 25.98	1.8673	1 26 14.7	12.403
17	23 35 15.26	1.9965	8 20 41.3	12.275	17	1 7 17.98	1.8663	1 38 38.4	12.388
18	23 37 14.91	1.9920	8 8 24.0	12.297	18	1 9 9.92	1.8653	1 51 1.1	12.371
19	23 39 14.31	1.9877	7 56 5.5	12.319	19	1 11 1.81	1.8644	2 3 22.8	12.354
20	23 41 13.45	1.9835	7 43 45.7	12.340	20	1 12 53.64	1.8635	2 15 43.5	12.336
21	23 43 12.33	1.9793	7 31 24.7	12.360	21	1 14 45.42	1.8627	2 28 3.1	12.318
22	23 45 10.96	1.9752	7 19 2.5	12.379	22	1 16 37.15	1.8619	2 40 21.6	12.299
23	23 47 9.35	1.9711	S. 7 6 39.2	12.397	23	1 18 28.85	1.8613	N. 2 52 38.9	12.279
	SATURDAY 10.					**MONDAY 12.**			
0	23 49 7.50	1.9671	S. 6 54 14.9	12.414	0	1 20 20.51	1.8607	N. 3 4 55.0	12.259
1	23 51 5.41	1.9632	6 41 49.6	12.430	1	1 22 12.13	1.8602	3 17 9.9	12.238
2	23 53 3.08	1.9593	6 29 23.3	12.444	2	1 24 3.72	1.8597	3 29 23.5	12.216
3	23 55 0.52	1.9556	6 16 56.2	12.458	3	1 25 55.28	1.8592	3 41 35.8	12.194
4	23 56 57.74	1.9520	6 4 28.3	12.471	4	1 27 46.82	1.8588	3 53 46.8	12.171
5	23 58 54.74	1.9484	5 51 59.7	12.483	5	1 29 38.34	1.8585	4 5 56.4	12.148
6	0 0 51.53	1.9448	5 39 30.4	12.494	6	1 31 29.84	1.8583	4 18 4.5	12.123
7	0 2 48.12	1.9414	5 27 0.4	12.505	7	1 33 21.33	1.8581	4 30 11.1	12.098
8	0 4 44.50	1.9380	5 14 29.8	12.514	8	1 35 12.81	1.8580	4 42 16.1	12.072
9	0 6 40.68	1.9347	5 1 58.7	12.523	9	1 37 4.29	1.8580	4 54 19.6	12.046
10	0 8 36.66	1.9314	4 49 27.1	12.531	10	1 38 55.77	1.8580	5 6 21.5	12.019
11	0 10 32.45	1.9283	4 36 55.0	12.538	11	1 40 47.25	1.8581	5 18 21.8	11.991
12	0 12 28.05	1.9252	4 24 22.4	12.544	12	1 42 38.73	1.8582	5 30 20.5	11.963
13	0 14 23.47	1.9222	4 11 49.5	12.550	13	1 44 30.22	1.8584	5 42 17.5	11.934
14	0 16 18.70	1.9192	3 59 16.3	12.554	14	1 46 21.73	1.8586	5 54 12.7	11.904
15	0 18 13.75	1.9163	3 46 42.8	12.558	15	1 48 13.25	1.8589	6 6 6.1	11.874
16	0 20 8.63	1.9135	3 34 9.2	12.560	16	1 50 4.79	1.8593	6 17 57.7	11.844
17	0 22 3.35	1.9108	3 21 35.5	12.561	17	1 51 56.35	1.8597	6 29 47.4	11.812
18	0 23 57.91	1.9081	3 9 1.8	12.562	18	1 53 47.94	1.8602	6 41 35.1	11.780
19	0 25 52.32	1.9055	2 56 28.1	12.563	19	1 55 39.56	1.8607	6 53 20.9	11.748
20	0 27 46.58	1.9030	2 43 54.3	12.563	20	1 57 31.22	1.8613	7 5 4.7	11.714
21	0 29 40.69	1.9006	2 31 20.5	12.563	21	1 59 22.91	1.8619	7 16 46.5	11.679
22	0 31 34.65	1.8982	2 18 46.8	12.561	22	2 1 14.64	1.8626	7 28 26.2	11.644
23	0 33 28.47	1.8959	2 6 13.2	12.559	23	2 3 6.42	1.8634	7 40 3.8	11.609
24	0 35 22.15	1.8937	S. 1 53 39.7	12.556	24	2 4 58.24	1.8642	N. 7 51 39.3	11.575

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 4 58.24	1.8642	N. 7 51 39.3	11.573
1	2 6 50.11	1.8650	8 3 12.6	11.536
2	2 8 42.04	1.8659	8 14 43.7	11.499
3	2 10 34.02	1.8668	8 26 12.5	11.461
4	2 12 26.05	1.8678	8 37 39.0	11.423
5	2 14 18.15	1.8689	8 49 3.2	11.384
6	2 16 10.32	1.8701	9 0 25.0	11.344
7	2 18 2.56	1.8713	9 11 44.4	11.304
8	2 19 54.87	1.8725	9 23 1.4	11.263
9	2 21 47.26	1.8738	9 34 15.9	11.221
10	2 23 39.73	1.8752	9 45 27.8	11.179
11	2 25 32.28	1.8765	9 56 37.2	11.136
12	2 27 24.91	1.8779	10 7 44.0	11.092
13	2 29 17.62	1.8793	10 18 48.1	11.048
14	2 31 10.42	1.8808	10 29 49.5	11.002
15	2 33 3.31	1.8824	10 40 48.2	10.956
16	2 34 56.30	1.8840	10 51 44.1	10.910
17	2 36 49.39	1.8857	11 2 37.2	10.863
18	2 38 42.58	1.8874	11 13 27.5	10.815
19	2 40 35.88	1.8892	11 24 14.9	10.766
20	2 42 29.28	1.8910	11 34 59.4	10.717
21	2 44 22.79	1.8928	11 45 40.9	10.668
22	2 46 16.41	1.8947	11 56 19.4	10.617
23	2 48 10.15	1.8966	N.12 6 54.8	10.566

WEDNESDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 50 4.01	1.8985	N.12 17 27.1	10.514
1	2 51 57.98	1.9005	12 27 56.3	10.461
2	2 53 52.07	1.9026	12 38 22.3	10.408
3	2 55 46.29	1.9047	12 48 45.1	10.354
4	2 57 40.64	1.9068	12 59 4.7	10.300
5	2 59 35.12	1.9089	13 9 21.1	10.246
6	3 1 29.72	1.9111	13 19 34.2	10.190
7	3 3 24.45	1.9133	13 29 43.9	10.134
8	3 5 19.31	1.9156	13 39 50.2	10.076
9	3 7 14.31	1.9179	13 49 53.0	10.018
10	3 9 9.45	1.9202	13 59 52.3	9.960
11	3 11 4.73	1.9226	14 9 48.1	9.901
12	3 13 0.15	1.9250	14 19 40.3	9.841
13	3 14 55.72	1.9274	14 29 28.9	9.781
14	3 16 51.44	1.9298	14 39 13.9	9.719
15	3 18 47.31	1.9323	14 48 55.2	9.657
16	3 20 43.33	1.9348	14 58 32.7	9.595
17	3 22 39.50	1.9374	15 8 6.5	9.533
18	3 24 35.82	1.9401	15 17 36.5	9.469
19	3 26 32.30	1.9427	15 27 2.6	9.404
20	3 28 28.94	1.9453	15 36 24.8	9.338
21	3 30 25.74	1.9480	15 45 43.1	9.272
22	3 32 22.70	1.9507	15 54 57.4	9.206
23	3 34 19.83	1.9534	16 4 7.7	9.139
24	3 36 17.12	1.9562	N.16 13 13.9	9.071

THURSDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 36 17.12	1.9562	N.16 13 13.9	9.071
1	3 38 14.56	1.9589	16 22 16.0	9.003
2	3 40 12.18	1.9617	16 31 14.0	8.933
3	3 42 9.97	1.9645	16 40 7.8	8.863
4	3 44 7.93	1.9673	16 48 57.4	8.792
5	3 46 6.06	1.9702	16 57 42.8	8.721
6	3 48 4.36	1.9731	17 6 23.9	8.649
7	3 50 2.83	1.9759	17 15 0.7	8.576
8	3 52 1.47	1.9788	17 23 33.1	8.502
9	3 54 0.29	1.9817	17 32 1.0	8.428
10	3 55 59.29	1.9847	17 40 24.4	8.353
11	3 57 58.46	1.9876	17 48 43.3	8.278
12	3 59 57.81	1.9906	17 56 57.6	8.201
13	4 1 57.33	1.9936	18 5 7.3	8.124
14	4 3 57.03	1.9966	18 13 12.4	8.047
15	4 5 56.91	1.9996	18 21 12.9	7.969
16	4 7 56.98	2.0026	18 29 8.7	7.890
17	4 9 57.23	2.0056	18 36 59.7	7.811
18	4 11 57.66	2.0087	18 44 46.0	7.730
19	4 13 58.27	2.0117	18 52 27.5	7.649
20	4 15 59.06	2.0147	19 0 4.1	7.568
21	4 18 0.03	2.0177	19 7 35.8	7.486
22	4 20 1.18	2.0208	19 15 2.5	7.403
23	4 22 2.52	2.0238	N.19 22 24.2	7.319

FRIDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 24 4.04	2.0268	N.19 29 40.9	7.235
1	4 26 5.75	2.0298	19 36 52.5	7.151
2	4 28 7.64	2.0328	19 43 59.0	7.065
3	4 30 9.71	2.0358	19 51 0.4	6.979
4	4 32 11.96	2.0388	19 57 56.6	6.893
5	4 34 14.38	2.0419	20 4 47.6	6.806
6	4 36 16.98	2.0450	20 11 33.4	6.718
7	4 38 19.77	2.0480	20 18 13.9	6.629
8	4 40 22.74	2.0510	20 24 49.0	6.539
9	4 42 25.89	2.0540	20 31 18.6	6.449
10	4 44 29.22	2.0570	20 37 42.8	6.358
11	4 46 32.73	2.0600	20 44 1.5	6.266
12	4 48 36.42	2.0630	20 50 14.7	6.174
13	4 50 40.30	2.0660	20 56 22.4	6.081
14	4 52 44.36	2.0689	21 2 24.5	5.989
15	4 54 48.59	2.0719	21 8 21.0	5.896
16	4 56 52.98	2.0748	21 14 11.9	5.802
17	4 58 57.55	2.0777	21 19 57.2	5.707
18	5 1 2.29	2.0805	21 25 36.8	5.611
19	5 3 7.21	2.0834	21 31 10.7	5.515
20	5 5 12.30	2.0862	21 36 33.8	5.419
21	5 7 17.55	2.0890	21 42 1.1	5.322
22	5 9 22.97	2.0918	21 47 17.6	5.224
23	5 11 28.56	2.0946	21 52 28.2	5.125
24	5 13 34.31	2.0973	N.21 57 32.8	5.026

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 13 34.31	2.0973	N.21 57 32.8	5.036
1	5 15 40.24	2.1000	22 2 31.4	4.927
2	5 17 46.33	2.1027	22 7 24.0	4.827
3	5 19 52.58	2.1054	22 12 10.6	4.727
4	5 21 58.99	2.1080	22 16 51.2	4.625
5	5 24 5.56	2.1106	22 21 25.7	4.523
6	5 26 12.28	2.1132	22 25 54.1	4.421
7	5 28 19.15	2.1157	22 30 16.4	4.318
8	5 30 26.17	2.1182	22 34 32.5	4.215
9	5 32 33.33	2.1207	22 38 42.4	4.112
10	5 34 40.64	2.1232	22 42 46.1	4.008
11	5 36 48.10	2.1256	22 46 43.5	3.903
12	5 38 55.70	2.1280	22 50 34.7	3.798
13	5 41 3.45	2.1304	22 54 19.5	3.693
14	5 43 11.35	2.1327	22 57 57.9	3.587
15	5 45 19.39	2.1349	23 1 29.9	3.480
16	5 47 27.56	2.1371	23 4 55.5	3.373
17	5 49 35.86	2.1393	23 8 14.7	3.266
18	5 51 44.28	2.1414	23 11 27.4	3.159
19	5 53 52.83	2.1435	23 14 33.7	3.051
20	5 56 1.50	2.1455	23 17 33.5	2.942
21	5 58 10.29	2.1475	23 20 26.8	2.833
22	6 0 19.19	2.1495	23 23 13.5	2.724
23	6 2 28.21	2.1514	N.23 25 53.7	2.615

SUNDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 4 37.35	2.1532	N.23 28 27.3	2.505
1	6 6 46.60	2.1551	23 30 54.3	2.395
2	6 8 55.96	2.1569	23 33 14.6	2.284
3	6 11 5.43	2.1586	23 35 28.2	2.172
4	6 13 15.00	2.1603	23 37 35.1	2.060
5	6 15 24.67	2.1619	23 39 35.3	1.948
6	6 17 34.44	2.1635	23 41 28.8	1.836
7	6 19 44.30	2.1650	23 43 15.6	1.723
8	6 21 54.25	2.1665	23 44 55.7	1.611
9	6 24 4.29	2.1679	23 46 29.0	1.498
10	6 26 14.42	2.1693	23 47 55.5	1.385
11	6 28 24.62	2.1706	23 49 15.2	1.272
12	6 30 34.90	2.1719	23 50 28.1	1.158
13	6 32 45.26	2.1731	23 51 34.2	1.043
14	6 34 55.69	2.1743	23 52 33.4	0.929
15	6 37 6.19	2.1754	23 53 25.8	0.815
16	6 39 16.75	2.1765	23 54 11.3	0.700
17	6 41 27.38	2.1775	23 54 49.9	0.585
18	6 43 38.06	2.1784	23 55 21.6	0.470
19	6 45 48.79	2.1793	23 55 46.4	0.355
20	6 47 59.57	2.1802	23 56 4.3	0.240
21	6 50 10.40	2.1810	23 56 15.3	0.125
22	6 52 21.27	2.1817	23 56 19.4	+0.010
23	6 54 32.19	2.1824	23 56 16.6	−0.105
24	6 56 43.15	2.1830	N.23 56 6.9	0.220

MONDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 56 43.15	2.1830	N.23 56 6.9	0.220
1	6 58 54.14	2.1835	23 55 50.2	0.336
2	7 1 5.17	2.1840	23 55 26.5	0.452
3	7 3 16.23	2.1844	23 54 55.8	0.568
4	7 5 27.32	2.1848	23 54 18.1	0.684
5	7 7 38.43	2.1852	23 53 33.4	0.800
6	7 9 49.55	2.1855	23 52 41.8	0.916
7	7 12 0.69	2.1857	23 51 43.4	1.032
8	7 14 11.84	2.1858	23 50 38.1	1.148
9	7 16 22.99	2.1859	23 49 25.8	1.264
10	7 18 34.14	2.1860	23 48 6.6	1.380
11	7 20 45.30	2.1860	23 46 40.4	1.495
12	7 22 56.46	2.1860	23 45 7.2	1.611
13	7 25 7.62	2.1859	23 43 27.0	1.727
14	7 27 18.77	2.1857	23 41 39.9	1.843
15	7 29 29.91	2.1855	23 39 45.8	1.959
16	7 31 41.04	2.1853	23 37 44.7	2.075
17	7 33 52.15	2.1850	23 35 36.7	2.190
18	7 36 3.24	2.1846	23 33 21.8	2.305
19	7 38 14.30	2.1842	23 30 59.9	2.420
20	7 40 25.33	2.1837	23 28 31.1	2.535
21	7 42 36.34	2.1832	23 25 55.4	2.650
22	7 44 47.32	2.1827	23 23 12.9	2.765
23	7 46 58.26	2.1820	N.23 20 23.6	2.880

TUESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 49 9.16	2.1813	N.23 17 27.4	2.994
1	7 51 20.02	2.1806	23 14 24.3	3.109
2	7 53 30.83	2.1798	23 11 14.3	3.223
3	7 55 41.59	2.1790	23 7 57.4	3.337
4	7 57 52.30	2.1782	23 4 33.7	3.450
5	8 0 2.96	2.1773	23 1 3.2	3.563
6	8 2 13.57	2.1763	22 57 25.9	3.676
7	8 4 24.13	2.1753	22 53 41.8	3.788
8	8 6 34.63	2.1743	22 49 51.0	3.901
9	8 8 45.07	2.1733	22 45 53.4	4.013
10	8 10 55.44	2.1722	22 41 49.1	4.126
11	8 13 5.73	2.1710	22 37 38.2	4.238
12	8 15 15.95	2.1698	22 33 20.6	4.350
13	8 17 26.10	2.1686	22 28 56.3	4.461
14	8 19 36.18	2.1673	22 24 25.3	4.572
15	8 21 46.19	2.1660	22 19 47.6	4.683
16	8 23 56.12	2.1647	22 15 3.3	4.793
17	8 26 5.96	2.1633	22 10 12.4	4.903
18	8 28 15.72	2.1619	22 5 14.9	5.013
19	8 30 25.39	2.1605	22 0 10.8	5.122
20	8 32 34.97	2.1590	21 55 0.2	5.230
21	8 34 44.46	2.1575	21 49 43.1	5.338
22	8 36 53.86	2.1560	21 44 19.6	5.446
23	8 39 3.17	2.1544	21 38 49.7	5.553
24	8 41 12.38	2.1528	N.21 33 13.4	5.660

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 41 12.38	2.1528	N.21 33 13.4	5.660
1	8 43 21.50	2.1512	21 27 30.6	5.767
2	8 45 30.53	2.1495	21 21 41.4	5.873
3	8 47 39.46	2.1479	21 15 45.8	5.978
4	8 49 48.29	2.1462	21 9 43.9	6.083
5	8 51 57.01	2.1445	21 3 35.7	6.188
6	8 54 5.63	2.1428	20 57 21.2	6.293
7	8 56 14.15	2.1411	20 51 0.4	6.397
8	8 58 22.56	2.1393	20 44 33.4	6.500
9	9 0 30.86	2.1375	20 38 0.3	6.602
10	9 2 39.05	2.1357	20 31 21.1	6.704
11	9 4 47.13	2.1339	20 24 35.8	6.805
12	9 6 55.10	2.1320	20 17 44.4	6.906
13	9 9 2.96	2.1302	20 10 46.9	7.007
14	9 11 10.71	2.1283	20 3 43.3	7.108
15	9 13 18.35	2.1265	19 56 33.7	7.208
16	9 15 25.88	2.1246	19 49 18.1	7.308
17	9 17 33.30	2.1227	19 41 56.5	7.407
18	9 19 40.61	2.1208	19 34 29.0	7.505
19	9 21 47.81	2.1189	19 26 55.7	7.603
20	9 23 54.89	2.1170	19 19 16.6	7.700
21	9 26 1.86	2.1151	19 11 31.7	7.797
22	9 28 8.71	2.1132	19 3 41.0	7.893
23	9 30 15.45	2.1113	N.18 55 44.6	7.988

THURSDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 32 22.08	2.1094	N.18 47 42.5	8.083
1	9 34 28.58	2.1076	18 39 34.8	8.177
2	9 36 34.97	2.1057	18 31 21.5	8.270
3	9 38 41.24	2.1038	18 23 2.6	8.363
4	9 40 47.40	2.1019	18 14 38.1	8.456
5	9 42 53.46	2.1000	18 6 8.0	8.548
6	9 44 59.41	2.0981	17 57 32.3	8.639
7	9 47 5.24	2.0962	17 48 51.2	8.730
8	9 49 10.95	2.0943	17 40 4.7	8.820
9	9 51 16.55	2.0925	17 31 12.8	8.910
10	9 53 22.05	2.0907	17 22 15.5	8.999
11	9 55 27.45	2.0888	17 13 12.9	9.087
12	9 57 32.74	2.0871	17 4 5.1	9.174
13	9 59 37.91	2.0853	16 54 52.1	9.260
14	10 1 42.97	2.0835	16 45 33.9	9.346
15	10 3 47.93	2.0817	16 36 10.6	9.432
16	10 5 52.78	2.0799	16 26 42.2	9.516
17	10 7 57.52	2.0782	16 17 8.7	9.600
18	10 10 2.16	2.0765	16 7 30.2	9.684
19	10 12 6.70	2.0748	15 57 46.7	9.767
20	10 14 11.14	2.0732	15 47 58.3	9.849
21	10 16 15.48	2.0715	15 38 4.9	9.930
22	10 18 19.72	2.0699	15 28 6.7	10.011
23	10 20 23.87	2.0683	15 18 3.6	10.092
24	10 22 27.93	2.0668	N.15 7 55.7	10.171

FRIDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 22 27.93	2.0668	N.15 7 55.7	10.171
1	10 24 31.89	2.0653	14 57 43.1	10.250
2	10 26 35.76	2.0638	14 47 25.8	10.328
3	10 28 39.54	2.0623	14 37 3.9	10.405
4	10 30 43.23	2.0608	14 26 37.4	10.482
5	10 32 46.84	2.0594	14 16 6.3	10.558
6	10 34 50.36	2.0580	14 5 30.6	10.633
7	10 36 53.80	2.0566	13 54 50.4	10.708
8	10 38 57.16	2.0553	13 44 5.8	10.782
9	10 41 0.44	2.0540	13 33 16.7	10.855
10	10 43 3.64	2.0528	13 22 23.2	10.928
11	10 45 6.77	2.0516	13 11 25.4	11.000
12	10 47 9.83	2.0505	13 0 23.3	11.071
13	10 49 12.82	2.0493	12 49 17.0	11.142
14	10 51 15.74	2.0482	12 38 6.5	11.210
15	10 53 18.60	2.0472	12 26 51.9	11.278
16	10 55 21.40	2.0462	12 15 33.2	11.346
17	10 57 24.14	2.0452	12 4 10.4	11.413
18	10 59 26.82	2.0443	11 52 43.6	11.479
19	11 1 29.44	2.0434	11 41 12.8	11.545
20	11 3 32.02	2.0425	11 29 38.1	11.610
21	11 5 34.55	2.0417	11 17 59.6	11.675
22	11 7 37.03	2.0410	11 6 17.3	11.739
23	11 9 39.47	2.0403	N.10 54 31.2	11.802

SATURDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 11 41.87	2.0397	N.10 42 41.3	11.864
1	11 13 44.23	2.0391	10 30 47.7	11.925
2	11 15 46.56	2.0386	10 18 50.4	11.985
3	11 17 48.86	2.0381	10 6 49.5	12.045
4	11 19 51.13	2.0377	9 54 45.1	12.104
5	11 21 53.37	2.0373	9 42 37.2	12.162
6	11 23 55.59	2.0369	9 30 25.9	12.219
7	11 25 57.79	2.0366	9 18 11.1	12.275
8	11 27 59.97	2.0363	9 5 52.9	12.331
9	11 30 2.13	2.0361	8 53 31.4	12.386
10	11 32 4.29	2.0360	8 41 6.6	12.440
11	11 34 6.45	2.0359	8 28 38.6	12.493
12	11 36 8.61	2.0359	8 16 7.4	12.545
13	11 38 10.77	2.0359	8 3 33.1	12.597
14	11 40 12.92	2.0360	7 50 55.8	12.648
15	11 42 15.08	2.0362	7 38 15.4	12.698
16	11 44 17.25	2.0365	7 25 32.0	12.747
17	11 46 19.44	2.0368	7 12 45.7	12.795
18	11 48 21.65	2.0371	6 59 56.6	12.842
19	11 50 23.88	2.0375	6 47 4.7	12.888
20	11 52 26.14	2.0380	6 34 10.0	12.934
21	11 54 28.43	2.0385	6 21 12.6	12.980
22	11 56 30.76	2.0391	6 8 12.6	13.024
23	11 58 33.13	2.0398	5 55 9.9	13.067
24	12 0 35.54	2.0405	N. 5 42 4.6	13.109

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 0 35.54	2.0405	N. 5 42 4.6	13.109
1	12 2 37.99	2.0412	5 28 56.7	13.150
2	12 4 40.48	2.0420	5 15 46.4	13.190
3	12 6 43.02	2.0429	5 2 33.8	13.230
4	12 8 45.62	2.0439	4 49 18.9	13.268
5	12 10 48.28	2.0449	4 36 1.7	13.305
6	12 12 51.01	2.0460	4 22 42.3	13.341
7	12 14 53.81	2.0472	4 9 20.7	13.377
8	12 16 56.68	2.0485	3 55 57.0	13.412
9	12 18 59.63	2.0498	3 42 31.2	13.447
10	12 21 2.66	2.0512	3 29 3.4	13.480
11	12 23 5.77	2.0527	3 15 33.7	13.512
12	12 25 8.97	2.0542	3 2 2.1	13.543
13	12 27 12.27	2.0558	2 48 28.6	13.573
14	12 29 15.67	2.0574	2 34 53.3	13.602
15	12 31 19.17	2.0591	2 21 16.4	13.630
16	12 33 22.77	2.0609	2 7 37.8	13.657
17	12 35 26.48	2.0628	1 53 57.6	13.683
18	12 37 30.30	2.0648	1 40 15.9	13.708
19	12 39 34.24	2.0668	1 26 32.7	13.732
20	12 41 38.30	2.0688	1 12 48.1	13.755
21	12 43 42.49	2.0710	0 59 2.2	13.777
22	12 45 46.81	2.0733	0 45 15.0	13.798
23	12 47 51.27	2.0756	N. 0 31 26.5	13.818

MONDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 49 55.87	2.0780	N. 0 17 36.8	13.837
1	12 52 0.62	2.0805	N. 0 3 46.0	13.855
2	12 54 5.52	2.0830	S. 0 10 5.8	13.870
3	12 56 10.57	2.0856	0 23 58.5	13.885
4	12 58 15.78	2.0882	0 37 52.0	13.899
5	13 0 21.15	2.0910	0 51 46.4	13.913
6	13 2 26.68	2.0938	1 5 41.6	13.925
7	13 4 32.39	2.0967	1 19 37.5	13.936
8	13 6 38.28	2.0997	1 33 34.0	13.945
9	13 8 44.35	2.1027	1 47 31.0	13.953
10	13 10 50.61	2.1058	2 1 28.4	13.960
11	13 12 57.06	2.1090	2 15 26.2	13.966
12	13 15 3.70	2.1123	2 29 24.3	13.971
13	13 17 10.53	2.1157	2 43 22.8	13.975
14	13 19 17.56	2.1192	2 57 21.5	13.977
15	13 21 24.80	2.1227	3 11 20.3	13.979
16	13 23 32.26	2.1263	3 25 19.1	13.979
17	13 25 39.94	2.1300	3 39 17.9	13.978
18	13 27 47.84	2.1337	3 53 16.6	13.976
19	13 29 55.98	2.1375	4 7 15.0	13.972
20	13 32 4.35	2.1413	4 21 13.1	13.967
21	13 34 12.95	2.1453	4 35 10.9	13.960
22	13 36 21.79	2.1493	4 49 8.3	13.952
23	13 38 30.87	2.1534	5 3 5.2	13.943
24	13 40 40.20	2.1576	S. 5 17 1.6	13.933

TUESDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 40 40.20	2.1576	S. 5 17 1.6	13.933
1	13 42 49.78	2.1619	5 30 57.3	13.922
2	13 44 59.62	2.1662	5 44 52.3	13.908
3	13 47 9.72	2.1706	5 58 46.4	13.893
4	13 49 20.09	2.1750	6 12 39.6	13.876
5	13 51 30.72	2.1796	6 26 31.7	13.858
6	13 53 41.63	2.1842	6 40 22.7	13.838
7	13 55 52.82	2.1889	6 54 12.5	13.818
8	13 58 4.29	2.1937	7 8 1.1	13.797
9	14 0 16.05	2.1985	7 21 48.4	13.775
10	14 2 28.10	2.2033	7 35 34.2	13.751
11	14 4 40.45	2.2083	7 49 18.5	13.725
12	14 6 53.10	2.2133	8 3 1.2	13.697
13	14 9 6.05	2.2185	8 16 42.2	13.668
14	14 11 19.30	2.2237	8 30 21.4	13.637
15	14 13 32.86	2.2289	8 43 58.7	13.605
16	14 15 46.74	2.2342	8 57 34.0	13.571
17	14 18 0.95	2.2396	9 11 7.2	13.535
18	14 20 15.48	2.2450	9 24 38.2	13.497
19	14 22 30.35	2.2506	9 38 6.9	13.458
20	14 24 45.56	2.2562	9 51 33.2	13.418
21	14 27 1.10	2.2618	10 4 57.1	13.376
22	14 29 16.98	2.2674	10 18 18.4	13.333
23	14 31 33.20	2.2732	S. 10 31 37.1	13.288

WEDNESDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 33 49.77	2.2790	S. 10 44 53.1	13.241
1	14 36 6.69	2.2849	10 58 6.2	13.193
2	14 38 23.96	2.2908	11 11 16.4	13.142
3	14 40 41.58	2.2968	11 24 23.5	13.090
4	14 42 59.56	2.3028	11 37 27.3	13.036
5	14 45 17.90	2.3088	11 50 27.8	12.980
6	14 47 36.60	2.3149	12 3 24.9	12.923
7	14 49 55.67	2.3211	12 16 18.5	12.864
8	14 52 15.12	2.3273	12 29 8.5	12.803
9	14 54 34.95	2.3336	12 41 54.8	12.741
10	14 56 55.16	2.3399	12 54 37.4	12.677
11	14 59 15.75	2.3463	13 7 16.1	12.611
12	15 1 36.72	2.3527	13 19 50.8	12.543
13	15 3 58.07	2.3591	13 32 21.4	12.473
14	15 6 19.81	2.3655	13 44 47.8	12.402
15	15 8 41.94	2.3720	13 57 9.8	12.328
16	15 11 4.46	2.3785	14 9 27.3	12.252
17	15 13 27.37	2.3851	14 21 40.1	12.175
18	15 15 50.67	2.3917	14 33 48.3	12.096
19	15 18 14.37	2.3983	14 45 51.8	12.015
20	15 20 38.47	2.4050	14 57 50.4	11.933
21	15 23 2.97	2.4116	15 9 43.9	11.849
22	15 25 27.87	2.4183	15 21 32.2	11.762
23	15 27 53.17	2.4250	15 33 15.3	11.673
24	15 30 18.87	2.4318	S. 15 44 53.0	11.583

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 29.					FRIDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	15 30 18.87	2.4318	S. 15 44 53.0	11.583	0	16 30 36.27	2.5902	S. 19 52 18.7	8.853
1	15 32 44.98	2.4385	15 56 25.2	11.491	1	16 33 11.86	2.5963	20 1 5.9	8.717
2	15 35 11.49	2.4453	16 7 51.9	11.398	2	16 35 47.82	2.6024	20 9 44.7	8.579
3	15 37 38.41	2.4520	16 19 13.0	11.303	3	16 38 24.15	2.6084	20 18 15.2	8.439
4	15 40 5.74	2.4588	16 30 28.3	11.205	4	16 41 0.84	2.6143	20 26 37.3	8.297
5	15 42 33.48	2.4656	16 41 37.6	11.105	5	16 43 37.88	2.6201	20 34 51.0	8.153
6	15 45 1.62	2.4723	16 52 40.9	11.003	6	16 46 15.27	2.6259	20 42 56.1	8.008
7	15 47 30.16	2.4791	17 3 38.0	10.900	7	16 48 53.00	2.6316	20 50 52.3	7.862
8	15 49 59.10	2.4858	17 14 28.9	10.795	8	16 51 31.07	2.6372	20 58 39.4	7.713
9	15 52 28.45	2.4925	17 25 13.4	10.688	9	16 54 9.46	2.6426	21 6 17.6	7.563
10	15 54 58.20	2.4992	17 35 51.4	10.578	10	16 56 48.18	2.6480	21 13 46.9	7.412
11	15 57 28.35	2.5059	17 46 22.8	10.466	11	16 59 27.22	2.6533	21 21 7.1	7.260
12	15 59 58.90	2.5126	17 56 47.4	10.353	12	17 2 6.58	2.6586	21 28 18.1	7.106
13	16 2 29.85	2.5193	18 7 5.2	10.238	13	17 4 46.26	2.6637	21 35 19.8	6.950
14	16 5 1.20	2.5259	18 17 16.1	10.121	14	17 7 26.24	2.6687	21 42 12.0	6.792
15	16 7 32.95	2.5325	18 27 20.0	10.003	15	17 10 6.52	2.6735	21 48 54.6	6.632
16	16 10 5.10	2.5391	18 37 16.8	9.882	16	17 12 47.09	2.6783	21 55 27.6	6.471
17	16 12 37.65	2.5457	18 47 6.3	9.760	17	17 15 27.92	2.6829	22 1 50.9	6.308
18	16 15 10.59	2.5522	18 56 48.3	9.636	18	17 18 9.03	2.6874	22 8 4.4	6.145
19	16 17 43.92	2.5586	19 6 22.8	9.510	19	17 20 50.42	2.6918	22 14 8.1	5.980
20	16 20 17.64	2.5650	19 15 49.6	9.382	20	17 23 32.08	2.6961	22 20 1.9	5.815
21	16 22 51.73	2.5714	19 25 8.7	9.253	21	17 26 13.97	2.7002	22 25 45.8	5.648
22	16 25 26.20	2.5777	19 34 20.0	9.121	22	17 28 56.10	2.7042	22 31 19.7	5.481
23	16 28 1.05	2.5840	19 43 23.3	8.988	23	17 31 38.47	2.7081	22 36 43.5	5.312
24	16 30 36.27	2.5902	S. 19 52 18.7	8.853	24	17 34 21.07	2.7120	S. 22 41 57.2	5.141

PHASES OF THE MOON.

	d	h	m
○ Full Moon, ...	2	18	27.3
☾ Last Quarter, ...	9	12	37.3
● New Moon, ...	17	14	29.5
☽ First Quarter, ...	25	10	44.4

	d	h
☾ Perigee, ...	2	18.1
☾ Apogee, ...	16	6.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Regulus	W.	77° 19′ 41″	2042	79° 12′ 10″	2032	81° 4′ 54″	2023	82° 57′ 52″	2014
	Mars	W.	50 49 24	2144	52 39 16	2133	54 29 25	2124	56 19 48	2114
	Spica	W.	24 1 9	2218	25 49 9	2184	27 38 0	2155	29 27 35	2132
	Antares	E.	24 3 40	2225	22 15 49	2248	20 28 33	2282	18 42 7	2333
	Saturn	E.	53 9 6	2016	51 15 57	2007	49 22 33	1997	47 28 54	1989
	α Aquilæ	E.	74 44 17	2805	73 9 55	2811	71 35 42	2819	70 1 39	2831
	Fomalhaut	E.	106 54 13	2229	105 6 29	2216	103 18 26	2204	101 30 4	2192
2	Mars	W.	65 34 51	2081	67 26 19	2077	69 17 54	2073	71 9 34	2071
	Spica	W.	38 43 10	2052	40 35 24	2042	42 27 53	2033	44 20 35	2026
	Saturn	E.	37 57 48	1959	36 3 9	1955	34 8 24	1952	33 13 34	1951
	α Aquilæ	E.	62 16 25	2937	60 44 53	2969	59 14 2	3007	57 43 58	3050
	Fomalhaut	E.	92 24 40	2155	90 35 5	2151	88 45 23	2147	86 55 36	2146
	α Pegasi	E.	108 58 48	2434	107 16 2	2422	105 32 58	2410	103 49 37	2401
3	Mars	W.	80 28 26	2072	82 20 9	2075	84 11 48	2077	86 3 22	2081
	Spica	W.	53 46 7	2010	55 39 25	2011	57 32 42	2013	59 25 56	2015
	α Aquilæ	E.	50 29 10	3362	49 6 10	3449	47 44 49	3547	46 25 17	3657
	Fomalhaut	E.	77 46 40	2155	75 57 5	2161	74 7 38	2168	72 18 22	2176
	α Pegasi	E.	95 10 19	2378	93 26 13	2379	91 42 8	2382	89 58 7	2386
4	Mars	W.	95 19 8	2115	97 9 44	2124	99 0 6	2135	100 50 12	2145
	Spica	W.	68 50 49	2040	70 43 21	2048	72 35 41	2057	74 27 47	2065
	Antares	W.	23 20 2	2180	25 9 0	2165	26 58 20	2156	28 47 54	2150
	Fomalhaut	E.	63 15 49	2238	61 28 18	2256	59 41 13	2275	57 54 37	2294
	α Pegasi	E.	81 20 14	2430	79 37 22	2443	77 54 49	2459	76 12 38	2476
5	Spica	W.	83 44 28	2122	85 34 54	2135	87 25 0	2149	89 14 45	2163
	Antares	W.	37 56 20	2163	39 45 43	2171	41 34 54	2180	43 23 52	2190
	Fomalhaut	E.	49 9 54	2428	47 26 59	2462	45 44 52	2499	44 3 37	2540
	α Pegasi	E.	67 48 27	2587	66 9 14	2615	64 30 39	2645	62 52 45	2677
	α Arietis	E.	109 57 21	2242	108 9 56	2252	106 22 46	2264	104 35 53	2276
6	Spica	W.	98 17 50	2243	100 5 14	2260	101 52 13	2277	103 38 47	2295
	Antares	W.	52 24 23	2255	54 11 29	2269	55 58 14	2284	57 44 37	2300
	Saturn	W.	22 31 43	2199	24 20 12	2214	26 8 18	2231	27 56 0	2246
	Fomalhaut	E.	35 53 20	2815	34 19 11	2891	32 46 40	2975	31 15 56	3073
	α Pegasi	E.	54 55 0	2876	53 22 10	2924	51 50 22	2977	50 19 40	3033
	α Arietis	E.	95 46 14	2346	94 1 22	2363	92 16 54	2380	90 32 50	2396
	Sun	E.	134 46 32	2509	133 5 31	2527	131 24 56	2546	129 44 45	2563
7	Antares	W.	66 30 36	2384	68 14 34	2401	69 58 8	2419	71 41 16	2436
	Saturn	W.	36 48 19	2333	38 33 30	2351	40 18 15	2369	42 2 34	2387
	α Pegasi	E.	43 5 20	3394	41 42 57	3487	40 22 18	3588	39 3 31	3701
	α Arietis	E.	81 58 49	2489	80 17 21	2509	78 36 20	2530	76 55 48	2549
	Sun	E.	121 30 15	2659	119 52 40	2678	118 15 30	2697	116 38 46	2717
8	Antares	W.	80 10 39	2525	81 51 17	2544	83 31 29	2561	85 11 17	2579
	Saturn	W.	50 37 43	2477	52 19 28	2494	54 0 49	2513	55 41 44	2531
	α Aquilæ	W.	43 26 28	4352	44 32 33	4259	45 40 4	4179	46 48 50	4106
	α Arietis	E.	68 40 13	2656	67 2 34	2678	65 25 24	2700	63 48 44	2723
	Sun	E.	108 41 39	2815	107 7 31	2835	105 33 48	2854	104 0 30	2873
9	Antares	W.	93 24 16	2666	95 1 41	2682	96 38 45	2699	98 15 26	2716
	Saturn	W.	64 0 17	2617	65 38 49	2632	67 17 0	2649	68 54 48	2666

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Regulus	W.	84° 51′ 4″	2006	86° 44′ 29″	1999	88° 38′ 5″	1993	90° 31′ 50″	1987
	Mars	W.	58 10 26	2106	60 1 16	2098	61 52 18	2091	63 43 31	2086
	Spica	W.	31 17 46	2111	33 8 29	2093	34 59 39	2077	36 51 14	2063
	Antares	E.	16 56 55	2405	15 13 28	2511	13 32 30	2672	11 55 12	2924
	Saturn	E.	45 35 2	1969	43 40 59	1975	41 46 45	1968	39 52 21	1963
	α Aquilæ	E.	68 27 51	2845	66 54 21	2862	65 21 14	2883	63 48 34	2908
	Fomalhaut	E.	99 41 25	2163	97 52 32	2174	96 3 25	2167	94 14 7	2161
2	Mars	W.	73 1 18	2069	74 53 5	2068	76 44 53	2069	78 36 40	2070
	Spica	W.	46 13 28	2021	48 6 29	2016	49 59 38	2014	51 52 51	2012
	Saturn	E.	30 18 42	1960	28 23 48	1950	26 28 54	1950	24 34 1	1952
	α Aquilæ	E.	56 14 47	3099	54 46 36	3153	53 19 31	3214	51 53 39	3285
	Fomalhaut	E.	85 55 47	2145	83 15 57	2146	81 26 8	2148	79 36 22	2151
	α Pegasi	E.	102 6 3	2392	100 22 17	2387	98 38 24	2382	96 54 23	2380
3	Mars	W.	87 54 50	2087	89 46 9	2092	91 37 20	2099	93 28 20	2107
	Spica	W.	61 19 7	2017	63 12 14	2022	65 5 14	2027	66 58 6	2033
	α Aquilæ	E.	45 7 44	3780	43 52 21	3918	42 39 19	4075	41 28 53	4251
	Fomalhaut	E.	70 29 19	2185	68 40 29	2196	66 51 56	2209	65 3 42	2223
	α Pegasi	E.	88 14 12	2391	86 30 25	2398	84 46 48	2407	83 3 23	2418
4	Mars	W.	102 40 3	2156	104 29 37	2168	106 18 53	2180	108 7 50	2194
	Spica	W.	76 19 40	2075	78 11 17	2086	80 2 38	2097	81 53 42	2109
	Antares	W.	30 37 37	2148	32 27 23	2149	34 17 7	2152	36 6 47	2157
	Fomalhaut	E.	56 8 29	2317	54 22 54	2342	52 37 55	2368	50 53 34	2396
	α Pegasi	E.	74 30 51	2494	72 49 30	2515	71 8 37	2537	69 28 15	2561
5	Spica	W.	91 4 8	2178	92 53 9	2194	94 41 46	2209	96 30 0	2225
	Antares	W.	45 12 34	2202	47 0 59	2214	48 49 6	2226	50 36 55	2240
	Fomalhaut	E.	42 23 19	2585	40 44 3	2634	39 5 54	2687	37 28 57	2747
	α Pegasi	E.	61 15 34	2712	59 39 10	2748	58 3 34	2787	56 28 49	2830
	α Arietis	E.	102 49 18	2288	101 3 1	2302	99 17 4	2316	97 31 28	2331
6	Spica	W.	105 24 54	2313	107 10 35	2331	108 55 49	2350	110 40 36	2369
	Antares	W.	59 30 37	2316	61 16 13	2333	63 1 25	2349	64 46 13	2366
	Saturn	W.	29 43 19	2264	31 30 12	2281	33 16 40	2298	35 2 42	2315
	Fomalhaut	E.	29 47 13	3183	28 20 44	3312	26 56 46	3463	25 35 40	3640
	α Pegasi	E.	48 50 8	3094	47 21 51	3160	45 54 54	3231	44 29 21	3309
	α Arietis	E.	88 49 10	2415	87 5 56	2432	85 23 7	2451	83 40 45	2470
	Sun	E.	128 4 59	2583	126 25 40	2601	124 46 46	2619	123 8 17	2639
7	Antares	W.	73 23 59	2454	75 6 17	2472	76 48 9	2489	78 29 37	2508
	Saturn	W.	43 46 27	2405	45 29 54	2423	47 12 56	2441	48 55 33	2460
	α Pegasi	E.	37 46 45	3826	36 32 10	3964	35 19 55	4119	34 10 12	4294
	α Arietis	E.	75 15 43	2570	73 36 7	2591	71 57 0	2612	70 18 22	2634
	Sun	E.	115 2 29	2737	113 26 38	2756	111 51 13	2775	110 16 13	2795
8	Antares	W.	86 50 41	2597	88 29 40	2614	90 8 16	2632	91 46 27	2649
	Saturn	W.	57 22 14	2548	59 2 20	2565	60 42 3	2583	62 21 21	2599
	α Aquilæ	W.	47 58 46	4043	49 9 43	3986	50 21 36	3938	51 34 17	3895
	α Arietis	E.	62 12 35	2746	60 36 56	2770	59 1 49	2794	57 27 13	2818
	Sun	E.	102 27 36	2892	100 55 7	2911	99 23 2	2929	97 51 20	2948
9	Antares	W.	99 51 45	2730	101 27 42	2747	103 3 19	2764	104 38 34	2779
	Saturn	W.	70 32 14	2681	72 9 20	2697	73 46 4	2711	75 22 29	2727

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	α Aquilæ	W.	52° 47′ 42″	3856	54° 1′ 46″	3822	55° 16′ 25″	3794	56° 31′ 33″	3768
	α Arietis	E.	55 53 8	2842	54 19 35	2868	52 46 35	2894	51 14 8	2920
	Sun	E.	96 20 2	2966	94 49 7	2984	93 18 34	3001	91 48 23	3019
10	Saturn	W.	76 58 33	2741	78 34 19	2756	80 9 45	2769	81 44 53	2783
	α Aquilæ	W.	62 52 51	3684	64 9 55	3674	65·27 10	3666	66 44 33	3659
	Fomalhaut	W.	27 8 20	3768	28 23 55	3684	29 40 59	3613	30 59 19	3555
	α Arietis	E.	43 40 38	3068	42 11 49	3101	40 43 41	3137	39 16 16	3175
	Sun	E.	84 22 45	3102	82 54 38	3117	81 26 49	3132	79 59 18	3148
11	Saturn	W.	89 36 16	2845	91 9 45	2857	92 42 59	2869	94 15 58	2879
	α Aquilæ	W.	73 12 53	3644	74 30 40	3644	75 48 27	3644	77 6 14	3646
	Fomalhaut	W.	37 44 4	3375	39 6 49	3355	40 29 57	3336	41 53 27	3321
	α Pegasi	W.	29 5 19	5602	29 54 52	5353	30 47 21	5141	31 42 27	4957
	α Arietis	E.	32 11 37	3415	30 49 38	3479	29 28 50	3550	28 9 21	3631
	Sun	E.	72 46 4	3215	71 20 13	3227	69 54 36	3241	68 29 15	3252
12	Saturn	W.	101 57 37	2927	103 29 21	2936	105 0 54	2945	106 32 16	2953
	α Aquilæ	W.	83 34 25	3663	84 51 51	3670	86 9 10	3675	87 26 24	3681
	Fomalhaut	W.	48 54 29	3275	50 19 10	3270	51 43 57	3265	53 8 50	3262
	α Pegasi	W.	36 49 26	4334	37 55 47	4250	39 3 26	4176	40 12 15	4110
	Sun	E.	61 25 45	3305	60 1 39	3314	58 37 44	3323	57 13 59	3332
13	α Aquilæ	W.	93 50 40	3721	95 7 5	3729	96 23 21	3740	97 39 26	3750
	Fomalhaut	W.	60 14 0	3252	61 39 8	3252	63 4 16	3251	64 29 25	3250
	α Pegasi	W.	46 10 18	3870	47 24 8	3835	48 38 34	3804	49 53 32	3775
	Sun	E.	50 17 38	3370	48 54 47	3376	47 32 3	3383	46 9 27	3387
14	Fomalhaut	W.	71 35 14	3250	73 0 24	3252	74 25 32	3251	75 50 41	3252
	α Pegasi	W.	56 15 0	3666	57 32 23	3650	58 50 3	3634	60 8 1	3621
	Sun	E.	39 17 52	3412	37 55 49	3415	36 33 50	3418	35 11 54	3423
15	Fomalhaut	W.	82 56 17	3254	84 21 22	3254	85 46 27	3255	87 11 31	3255
	α Pegasi	W.	66 41 12	3565	68 0 25	3556	69 19 47	3548	70 39 18	3540
	Sun	E.	28 23 7	3434	27 1 29	3436	25 39 52	3437	24 18 17	3438
20	Sun	W.	26 20 46	3334	27 44 18	3327	29 7 58	3321	30 31 45	3314
	Regulus	E.	33 8 47	3015	31 38 53	3013	30 8 56	3010	28 38 56	3009
	Mars	E.	66 48 44	3157	65 21 43	3151	63 54 35	3146	62 27 21	3141
	Spica	E.	87 12 12	3011	85 42 13	3005	84 12 6	2999	82 41 52	2993
21	Sun	W.	37 32 43	3277	38 57 21	3269	40 22 9	3260	41 47 7	3253
	Mars	E.	55 9 26	3110	53 41 28	3104	52 13 23	3098	50 45 11	3090
	Spica	E.	75 8 44	2961	73 37 42	2954	72 6 32	2946	70 35 12	2940
22	Sun	W.	48 54 33	3205	50 20 36	3195	51 46 51	3184	53 13 19	3174
	Mars	E.	43 21 57	3056	41 52 53	3047	40 23 39	3041	38 54 17	3034
	Spica	E.	62 56 13	2901	61 23 55	2894	59 51 28	2885	58 18 50	2876
	Antares	E.	108 50 13	2892	107 17 44	2881	105 45 1	2871	104 12 5	2862
23	Sun	W.	60 28 54	3117	61 56 43	3104	63 24 48	3091	64 53 8	3080
	Venus	W.	16 48 3	3185	18 14 30	3170	19 41 15	3153	21 8 20	3139
	Mars	E.	31 25 20	3002	29 55 10	2996	28 24 52	2993	26 54 31	2990
	Spica	E.	50 32 55	2834	48 59 11	2825	47 25 16	2817	45 51 10	2808
	Antares	E.	96 24 6	2808	94 49 48	2795	93 15 14	2783	91 40 24	2772

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L of Diff.	XXIh.	P. L. of Diff.
9	α Aquilæ	W.	57° 47′ 8″	3746	59° 3′ 6″	3727	60° 19′ 24″	3710	61° 36′ 0″	3696
	α Arietis	E.	49 42 15	2948	48 10 57	2976	46 40 14	3004	45 10 6	3036
	Sun	E.	90 18 34	3036	88 49 6	3053	87 19 59	3069	85 51 12	3086
10	Saturn	W.	83 19 43	2796	84 54 16	2808	86 28 33	2822	88 2 32	2834
	α Aquilæ	W.	68 2 4	3653	69 19 41	3649	70 37 22	3646	71 55 7	3645
	Fomalhaut	W.	32 18 42	3506	33 39 0	3464	35 0 4	3429	36 21 48	3400
	α Arietis	E.	37 49 37	3216	36 23 46	3259	34 58 46	3306	33 34 42	3358
	Sun	E.	78 32 6	3162	77 5 11	3175	75 38 32	3189	74 12 10	3203
11	Saturn	W.	95 48 44	2890	97 21 16	2900	98 53 35	2909	100 25 42	2919
	α Aquilæ	W.	78 23 59	3649	79 41 41	3651	80 59 20	3655	82 16 55	3660
	Fomalhaut	W.	43 17 14	3308	44 41 16	3298	46 5 30	3288	47 29 55	3281
	α Pegasi	W.	32 39 56	4797	33 39 35	4658	34 41 10	4535	35 44 31	4429
	α Arietis	E.	26 51 20	3794	25 34 58	3830	24 20 27	3955	23 8 3	4101
	Sun	E.	67 4 7	3264	65 39 13	3274	64 14 31	3285	62 50 2	3295
12	Saturn	W.	108 3 28	2960	109 34 31	2968	111 5 24	2974	112 36 9	2980
	α Aquilæ	W.	88 43 31	3689	90 0 30	3695	91 17 22	3704	92 34 5	3711
	Fomalhaut	W.	54 33 46	3259	55 58 46	3256	57 23 49	3255	58 48 53	3253
	α Pegasi	W.	41 22 7	4050	42 32 57	3999	43 44 38	3950	44 57 7	3909
	Sun	E.	55 50 25	3340	54 27 0	3348	53 3 44	3356	51 40 37	3363
13	α Aquilæ	W.	98 55 20	3761	100 11 3	3772	101 26 34	3785	102 41 52	3797
	Fomalhaut	W.	65 54 35	3250	67 19 45	3250	68 44 55	3250	70 10 5	3251
	α Pegasi	W.	51 9 0	3749	52 24 55	3726	53 41 15	3705	54 57 57	3685
	Sun	E.	44 46 56	3393	43 24 32	3398	42 2 13	3403	40 40 0	3408
14	Fomalhaut	W.	77 15 49	3253	78 40 56	3253	80 6 3	3253	81 31 10	3253
	α Pegasi	W.	61 26 13	3608	62 44 39	3596	64 3 18	3585	65 22 9	3574
	Sun	E.	33 50 3	3424	32 28 14	3427	31 6 28	3431	29 44 46	3433
15	Fomalhaut	W.	88 36 35	3256	90 1 38	3256	91 26 41	3257	92 51 43	3257
	α Pegasi	W.	71 58 58	3533	73 18 46	3526	74 38 41	3520	75 58 43	3515
	Sun	E.	22 56 44	3438	21 35 11	3439	20 13 39	3439	18 52 7	3440
20	Sun	W.	31 55 40	3307	33 19 43	3300	34 43 54	3292	36 8 15	3286
	Regulus	E.	27 8 54	3007	25 38 50	3008	24 8 47	3008	22 38 44	3010
	Mars	E.	61 0 1	3134	59 32 33	3129	58 4 58	3123	56 37 16	3116
	Spica	E.	81 11 31	2988	79 41 1	2981	78 10 24	2974	76 39 39	2966
21	Sun	W.	43 12 14	3243	44 37 32	3234	46 3 1	3225	47 28 41	3214
	Mars	E.	49 16 49	3083	47 48 19	3076	46 19 40	3069	44 50 53	3062
	Spica	E.	69 3 44	2931	67 32 5	2925	66 0 18	2916	64 28 20	2909
22	Sun	W.	54 39 59	3163	56 6 52	3152	57 33 59	3141	59 1 19	3129
	Mars	E.	37 24 47	3026	35 55 7	3020	34 25 19	3014	32 55 23	3008
	Spica	E.	56 46 1	2868	55 13 1	2859	53 39 50	2851	52 6 28	2842
	Antares	E.	102 38 57	2851	101 5 35	2841	99 32 0	2829	97 58 10	2818
23	Sun	W.	66 21 42	3066	67 50 33	3052	69 19 41	3039	70 49 5	3026
	Venus	W.	22 35 42	3124	24 3 22	3110	25 31 20	3095	26 59 36	3079
	Mars	E.	25 24 6	2989	23 53 39	2989	22 23 13	2993	20 52 52	2999
	Spica	E.	44 16 53	2800	42 42 25	2792	41 7 47	2784	39 32 58	2778
	Antares	E.	90 5 20	2760	88 30 0	2747	86 54 23	2735	85 18 30	2723

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
24	Sun	W.	72° 18′ 46″	3012	73° 48′ 44″	2997	75° 19′ 1″	2983	76° 49′ 35″	2968
	Venus	W.	28 28 11	3064	29 57 4	3050	31 26 15	3034	32 55 46	3018
	Regulus	W.	17 17 18	2793	18 51 55	2763	20 27 12	2735	22 3 5	2711
	Spica	E.	37 58 0	2770	36 22 53	2765	34 47 39	2759	33 12 17	2754
	Antares	E.	83 42 21	2710	82 5 54	2696	80 29 9	2684	78 52 8	2670
	Saturn	E.	112 1 43	2657	110 24 6	2644	108 46 11	2630	107 7 57	2618
25	Sun	W.	84 27 13	2891	85 59 44	2875	87 32 35	2859	89 5 47	2842
	Venus	W.	40 28 16	2938	41 59 47	2923	43 31 37	2905	45 3 50	2887
	Regulus	W.	30 9 59	2609	31 48 42	2590	33 27 51	2572	35 7 24	2553
	Antares	E.	70 42 24	2601	69 3 31	2587	67 24 18	2573	65 44 46	2559
	Saturn	E.	98 52 7	2545	97 11 57	2531	95 31 27	2517	93 50 37	2501
	α Aquilæ	E.	114 36 16	3445	113 14 50	3408	111 52 42	3373	110 29 55	3339
26	Sun	W.	96 57 8	2759	98 32 30	2743	100 8 13	2725	101 44 20	2707
	Venus	W.	52 50 21	2802	54 24 46	2785	55 59 34	2769	57 34 43	2750
	Regulus	W.	43 31 17	2467	45 13 16	2450	46 55 39	2434	48 38 25	2417
	Antares	E.	57 22 9	2487	55 40 38	2473	53 58 47	2460	52 16 37	2446
	Saturn	E.	85 21 2	2424	83 38 1	2408	81 54 38	2393	80 10 53	2376
	α Aquilæ	E.	103 26 52	3193	102 0 35	3169	100 33 49	3145	99 6 34	3122
27	Sun	W.	109 50 36	2623	111 29 0	2607	113 7 45	2590	114 46 54	2573
	Venus	W.	65 36 21	2664	67 13 49	2646	68 51 41	2631	70 29 54	2613
	Regulus	W.	57 18 18	2334	59 3 28	2317	60 49 2	2302	62 34 58	2287
	Mars	W.	20 54 12	2596	22 33 12	2563	24 12 58	2534	25 53 24	2506
	Antares	E.	43 41 3	2389	41 57 3	2371	40 12 46	2362	38 28 16	2351
	Saturn	E.	71 26 24	2298	69 40 21	2283	67 53 56	2268	66 7 9	2252
	α Aquilæ	E.	91 43 48	3025	90 14 6	3009	88 44 5	2995	87 13 46	2981
28	Sun	W.	123 8 14	2494	124 49 35	2480	126 31 17	2465	128 13 20	2451
	Venus	W.	78 46 42	2533	80 27 10	2518	82 7 58	2502	83 49 8	2489
	Regulus	W.	71 30 22	2211	73 18 33	2196	75 7 6	2182	76 56 0	2170
	Mars	W.	34 24 18	2396	36 7 59	2378	37 52 6	2359	39 36 39	2343
	Spica	W.	18 31 48	2513	20 12 43	2449	21 55 8	2397	23 38 47	2353
	Antares	E.	29 42 52	2346	27 57 30	2338	26 12 11	2334	24 27 2	2345
	Saturn	E.	57 7 38	2178	55 18 38	2165	53 29 18	2151	51 39 37	2138
	α Aquilæ	E.	79 38 36	2937	78 7 4	2933	76 35 27	2931	75 3 47	2930
	Fomalhaut	E.	112 28 57	2411	110 45 38	2399	109 1 52	2374	107 17 40	2356
29	Venus	W.	92 19 47	2423	94 2 49	2411	95 46 8	2400	97 29 43	2389
	Regulus	W.	86 5 21	2108	87 56 8	2098	89 47 11	2087	91 38 30	2077
	Mars	W.	48 25 7	2270	50 11 51	2258	51 58 53	2245	53 46 13	2234
	Spica	W.	32 30 23	2206	34 18 42	2185	36 7 32	2167	37 56 49	2149
	Saturn	E.	42 26 24	2079	40 34 52	2068	38 43 3	2057	36 50 58	2049
	α Aquilæ	E.	67 26 17	2963	65 55 18	2978	64 24 38	2996	62 54 20	3018
	Fomalhaut	E.	98 30 46	2283	96 44 21	2271	94 57 39	2259	93 10 39	2249
30	Venus	W.	106 11 7	2346	107 56 0	2340	109 41 1	2334	111 26 11	2329
	Regulus	W.	100 58 34	2037	102 51 10	2032	104 43 54	2026	106 36 47	2022
	Mars	W.	62 46 40	2180	64 35 24	2182	66 24 18	2176	68 13 21	2171
	Spica	W.	47 9 1	2065	49 0 23	2075	50 52 0	2068	52 43 49	2061
	α Aquilæ	E.	55 31 13	3192	54 4 54	3243	52 39 36	3302	51 15 27	3368
	Fomalhaut	E.	84 12 18	2211	82 24 7	2206	80 35 49	2203	78 47 26	2201
	α Pegasi	E.	101 15 11	2457	99 32 57	2445	97 50 27	2436	96 7 44	2429

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
24	Sun	W.	78 20 28	2953	79 51 40	2937	81 23 12	2923	82 55 2	2906
	Venus	W.	34 25 37	3002	35 55 47	2987	37 26 16	2970	38 57 6	2954
	Regulus	W.	23 39 30	2688	25 16 26	2667	26 53 50	2647	28 31 41	2627
	Spica	E.	31 36 49	2752	30 1 18	2751	28 25 46	2752	26 50 15	2756
	Antares	E.	77 14 48	2656	75 37 9	2643	73 59 13	2630	72 20 59	2615
	Saturn	E.	105 29 26	2603	103 50 35	2589	102 11 25	2575	100 31 56	2561
25	Sun	W.	90 39 20	2825	92 13 15	2810	93 47 30	2792	95 22 8	2775
	Venus	W.	46 36 25	2871	48 9 21	2854	49 42 39	2838	51 16 18	2819
	Regulus	W.	36 47 23	2537	38 27 45	2519	40 8 32	2502	41 49 42	2485
	Antares	E.	64 4 54	2544	62 24 42	2530	60 44 11	2515	59 3 19	2502
	Saturn	E.	92 9 25	2486	90 27 52	2470	88 45 57	2455	87 3 41	2439
	α Aquilæ	E.	109 6 29	3308	107 42 27	3277	106 17 49	3248	104 52 37	3220
26	Sun	W.	103 20 50	2691	104 57 42	2674	106 34 57	2657	108 12 35	2640
	Venus	W.	59 10 17	2733	60 46 13	2715	62 22 33	2698	63 59 15	2681
	Regulus	W.	50 21 36	2400	52 5 11	2383	53 49 10	2367	55 33 32	2350
	Antares	E.	50 34 8	2432	48 51 19	2419	47 8 11	2407	45 24 46	2394
	Saturn	E.	78 26 44	2361	76 42 13	2345	74 57 19	2330	73 12 3	2314
	α Aquilæ	E.	97 38 51	3100	96 10 41	3080	94 42 7	3060	93 13 9	3042
27	Sun	W.	116 26 26	2557	118 6 20	2541	119 46 36	2525	121 27 14	2510
	Venus	W.	72 8 31	2596	73 47 31	2580	75 26 53	2564	77 6 37	2549
	Regulus	W.	64 21 17	2270	66 8 0	2256	67 55 5	2241	69 42 32	2226
	Mars	W.	27 34 29	2481	29 16 9	2458	30 58 21	2436	32 41 5	2415
	Antares	E.	36 43 31	2343	34 58 34	2336	33 13 27	2331	31 28 12	2327
	Saturn	E.	64 19 59	2237	62 32 26	2223	60 44 32	2208	58 56 16	2193
	α Aquilæ	E.	85 43 10	2969	84 12 19	2959	82 41 15	2951	81 10 1	2942
28	Sun	W.	129 55 42	2437	131 38 24	2423	133 21 26	2411	135 4 45	2398
	Venus	W.	85 30 37	2474	87 12 27	2462	88 54 34	2447	90 37 2	2435
	Regulus	W.	78 45 13	2156	80 34 47	2143	82 24 40	2132	84 14 51	2119
	Mars	W.	41 21 36	2327	43 6 56	2311	44 52 39	2297	46 38 43	2283
	Spica	W.	25 23 30	2316	27 9 6	2283	28 55 31	2253	30 42 39	2229
	Antares	E.	22 42 8	2363	20 57 40	2390	19 13 51	2431	17 31 0	2489
	Saturn	E.	49 49 36	2126	47 59 16	2113	46 8 37	2101	44 17 39	2090
	α Aquilæ	E.	73 32 6	2932	72 0 28	2936	70 28 55	2942	68 57 30	2952
	Fomalhaut	E.	105 33 2	2340	103 48 1	2325	102 2 38	2309	100 16 52	2296
29	Venus	W.	99 13 34	2380	100 57 38	2370	102 41 56	2362	104 26 26	2354
	Regulus	W.	93 30 5	2068	95 21 53	2059	97 13 55	2052	99 6 9	2044
	Mars	W.	55 33 50	2224	57 21 42	2214	59 9 48	2205	60 58 8	2197
	Spica	W.	39 46 33	2134	41 36 40	2120	43 27 8	2107	45 17 56	2096
	Saturn	E.	34 58 40	2039	33 6 7	2032	31 13 22	2024	29 20 25	2017
	α Aquilæ	E.	61 24 29	3043	59 55 10	3073	58 26 27	3107	56 58 26	3147
	Fomalhaut	E.	91 23 24	2239	89 35 55	2231	87 48 14	2223	86 0 21	2216
30	Venus	W.	113 11 28	2325	114 56 51	2321	116 42 20	2319	118 27 52	2317
	Regulus	W.	108 29 47	2018	110 22 53	2015	112 16 4	2013	114 9 18	2011
	Mars	W.	70 2 32	2167	71 51 49	2163	73 41 13	2160	75 30 41	2158
	Spica	W.	54 35 49	2054	56 27 59	2048	58 20 18	2044	60 12 44	2041
	α Aquilæ	E.	49 52 34	3443	48 31 6	3527	47 11 12	3623	45 53 3	3731
	Fomalhaut	E.	76 59 0	2200	75 10 32	2200	73 22 4	2201	71 33 38	2204
	α Pegasi	E.	94 24 50	2422	92 41 47	2417	90 58 37	2415	89 15 23	2414

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sat.	1	6 39 50.56	10.340	N.23 8 23.1	− 9.85	15 46.20	68.80	3 26.50	0.483
Sun.	2	6 43 58.60	10.330	23 4 14.6	10.86	15 46.20	68.76	3 37.95	0.473
Mon.	3	6 48 6.38	10.318	22 59 41.9	11.87	15 46.20	68.72	3 49.14	0.461
Tues.	4	6 52 13.88	10.306	22 54 45.2	12.86	15 46.20	68.68	4 0.06	0.449
Wed.	5	6 56 21.08	10.293	22 49 24.6	13.85	15 46.21	68.64	4 10.67	0.436
Thur.	6	7 0 27.96	10.279	22 43 40.0	14.84	15 46.22	68.59	4 20.96	0.422
Frid.	7	7 4 34.50	10.265	22 37 32.0	15.82	15 46.23	68.54	4 30.91	0.408
Sat.	8	7 8 40.68	10.250	22 31 0.5	16.80	15 46.25	68.49	4 40.51	0.393
Sun.	9	7 12 46.49	10.235	22 24 5.5	17.77	15 46.27	68.43	4 49.74	0.378
Mon.	10	7 16 51.92	10.218	22 16 47.3	18.74	15 46.29	68.37	4 58.58	0.361
Tues.	11	7 20 56.94	10.201	22 9 6.1	19.69	15 46.32	68.31	5 7.02	0.344
Wed.	12	7 25 1.56	10.183	22 1 1.9	20.64	15 46.35	68.25	5 15.05	0.326
Thur.	13	7 29 5.73	10.163	21 52 35.1	21.58	15 46.39	68.18	5 22.65	0.307
Frid.	14	7 33 9.44	10.145	21 43 45.8	22.51	15 46.43	68.11	5 29.80	0.288
Sat.	15	7 37 12.67	10.125	21 34 34.2	23.44	15 46.48	68.04	5 36.47	0.268
Sun.	16	7 41 15.42	10.104	21 25 0.4	24.35	15 46.54	67.97	5 42.64	0.247
Mon.	17	7 45 17.67	10.084	21 15 4.8	25.26	15 46.60	67.89	5 48.31	0.227
Tues.	18	7 49 19.40	10.062	21 4 47.5	26.16	15 46.66	67.82	5 53.47	0.205
Wed.	19	7 53 20.59	10.038	20 54 8.7	27.06	15 46.73	67.75	5 58.09	0.182
Thur.	20	7 57 21.22	10.014	20 43 8.7	27.94	15 46.81	67.68	6 2.15	0.158
Frid.	21	8 1 21.29	9.990	20 31 47.9	28.80	15 46.89	67.60	6 5.65	0.134
Sat.	22	8 5 20.79	9.966	20 20 6.3	29.66	15 46.98	67.52	6 8.59	0.110
Sun.	23	8 9 19.69	9.941	20 8 4.3	30.50	15 47.07	67.44	6 10.93	0.085
Mon.	24	8 13 17.99	9.916	19 55 42.0	31.33	15 47.17	67.36	6 12.66	0.060
Tues.	25	8 17 15.69	9.891	19 42 59.9	32.16	15 47.27	67.27	6 13.80	0.035
Wed.	26	8 21 12.78	9.866	19 29 58.2	32.97	15 47.38	67.19	6 14.33	0.010
Thur.	27	8 25 9.26	9.841	19 16 37.1	33.78	15 47.49	67.10	6 14.25	0.015
Frid.	28	8 29 5.12	9.816	19 2 56.9	34.57	15 47.60	67.02	6 13.56	0.040
Sat.	29	8 33 0.37	9.790	18 48 57.9	35.35	15 47.71	66.93	6 12.26	0.066
Sun.	30	8 36 55.01	9.765	18 34 40.4	36.11	15 47.83	66.85	6 10.35	0.091
Mon.	31	8 40 49.03	9.739	18 20 4.5	36.86	15 47.95	66.76	6 7.83	0.117
Tues.	32	8 44 42.44	9.714	N.18 5 10.7	−37.60	15 48.07	66.67	6 4.69	0.142

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be subt'd from Mean Time.*	Diff. for 1 hour.	Sidereal Time, or Right Ascension of *Mean* Sun.	
		h m s	s	° ′ ″	″	m s	s	h m s	
Sat.	1	6 39 49.96	10.339	N.23 8 23.7	– 9.85	3 26.47	0.483	6 36 23.49	
Sun.	2	6 43 57.97	10.329	23 4 15.3	10.86	3 37.92	0.473	6 40 20.05	
Mon.	3	6 48 5.72	10.317	22 59 42.7	11.87	3 49.12	0.461	6 44 16.60	
Tues.	4	6 52 13.19	10.305	22 54 46.1	12.86	4 0.03	0.449	6 48 13.16	
Wed.	5	6 56 20.36	10.292	22 49 25.6	13.85	4 10.64	0.436	6 52 9.72	
Thur.	6	7 0 27.21	10.278	22 43 41.3	14.84	4 20.93	0.422	6 56 6.28	
Frid.	7	7 4 33.71	10.264	22 37 33.3	15.82	4 30.88	0.408	7 0 2.83	
Sat.	8	7 8 39.87	10.249	22 31 1.8	16.80	4 40.48	0.393	7 3 59.39	
Sun.	9	7 12 45.66	10.234	22 24 6.9	17.77	4 49.71	0.378	7 7 55.95	
Mon.	10	7 16 51.06	10.217	22 16 48.9	18.74	4 58.55	0.361	7 11 52.51	
Tues.	11	7 20 56.06	10.200	22 9 7.8	19.69	5 6.99	0.344	7 15 49.07	
Wed.	12	7 25 0.65	10.182	22 1 3.8	20.64	5 15.02	0.326	7 19 45.63	
Thur.	13	7 29 4.81	10.163	21 52 37.1	21.58	5 22.62	0.307	7 23 42.19	
Frid.	14	7 33 8.51	10.144	21 43 47.9	22.51	5 29.77	0.288	7 27 38.74	
Sat.	15	7 37 11.73	10.124	21 34 36.4	23.44	5 36.44	0.268	7 31 35.29	
Sun.	16	7 41 14.46	10.103	21 25 2.8	24.35	5 42.61	0.247	7 35 31.85	
Mon.	17	7 45 16.70	10.083	21 15 7.3	25.26	5 48.29	0.227	7 39 28.41	
Tues.	18	7 49 18.42	10.061	21 4 50.1	26.16	5 53.45	0.205	7 43 24.97	
Wed.	19	7 53 19.59	10.038	20 54 11.4	27.06	5 58.07	0.182	7 47 21.52	
Thur.	20	7 57 20.21	10.014	20 43 11.5	27.94	6 2.13	0.158	7 51 18.08	
Frid.	21	8 1 20.27	9.990	20 31 50.8	28.80	6 5.63	0.134	7 55 14.64	
Sat.	22	8 5 19.76	9.966	20 20 9.3	29.66	6 8.57	0.110	7 59 11.19	
Sun.	23	8 9 18.66	9.941	20 8 7.4	30.50	6 10.91	0.085	8 3 7.75	
Mon.	24	8 13 16.96	9.916	19 55 45.3	31.33	6 12.65	0.060	8 7 4.31	4/
Tues.	25	8 17 14.66	9.891	19 43 3.3	32.16	6 13.80	0.035	8 11 0.86	
Wed.	26	8 21 11.75	9.866	19 30 1.7	32.97	6 14.33	0.010	8 14 57.42	
Thur.	27	8 25 8.23	9.841	19 16 40.7	33.78	6 14.25	0.015	8 18 53.98	
Frid.	28	8 29 4.10	9.816	19 3 0.5	34.57	6 13.57	0.040	8 22 50.53	
Sat.	29	8 32 59.36	9.790	18 49 1.6	35.35	6 12.27	0.066	8 26 47.09	
Sun.	30	8 36 54.01	9.765	18 34 44.1	36.11	6 10.36	0.091	8 30 43.65	
Mon.	31	8 40 48.04	9.739	18 20 8.3	36.86	6 7.84	0.117	8 34 40.20	
Tues.	32	8 44 41.46	9.714	N.18 5 14.5	–37.60	6 4.71	0.142	8 38 36.76	
NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.								**Diff. for 1 hour** +9ˢ.8565	

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	182	99 9 19.2	9 11.2	142.95	+0.17	0.0071892	+ 1.1	17 20 45.54
2	183	100 6 30.1	6 21.9	142.94	+0.04	.0071911	+ 0.5	17 16 49.63
3	184	101 3 40.9	3 32.5	142.94	−0.09	.0071916	− 0.1	17 12 53.72
4	185	102 0 51.7	0 43.1	142.95	0.20	.0071907	0.7	17 8 57.81
5	186	102 58 2.7	57 54.0	142.97	0.30	.0071883	1.3	17 5 1.90
6	187	103 55 14.0	55 5.1	142.98	0.39	.0071844	2.0	17 1 5.99
7	188	104 52 25.6	52 16.5	142.99	0.44	.0071789	2.7	16 57 10.07
8	189	105 49 37.5	49 28.2	143.00	0.46	.0071717	3.4	16 53 14.16
9	190	106 46 49.8	46 40.3	143.02	0.45	.0071627	4.1	16 49 18.25
10	191	107 44 2.6	43 52.9	143.04	0.41	.0071517	5.0	16 45 22.34
11	192	108 41 16.0	41 6.1	143.07	0.35	.0071387	5.9	16 41 26.42
12	193	109 38 29.9	38 19.8	143.09	0.25	.0071234	6.9	16 37 30.51
13	194	110 35 44.4	35 34.1	143.11	0.14	.0071058	7.9	16 33 34.60
14	195	111 32 59.4	32 49.0	143.13	−0.02	.0070857	8.9	16 29 38.69
15	196	112 30 14.9	30 4.3	143.16	+0.10	.0070631	10.0	16 25 42.77
16	197	113 27 30.9	27 20.1	143.18	0.24	.0070381	11.1	16 21 46.86
17	198	114 24 47.4	24 36.4	143.20	0.37	.0070105	12.1	16 17 50.95
18	199	115 22 4.4	21 53.3	143.22	0.48	.0069802	13.2	16 13 55.04
19	200	116 19 21.8	19 10.6	143.23	0.57	.0069473	14.2	16 9 59.13
20	201	117 16 39.6	16 28.2	143.24	0.63	.0069119	15.3	16 6 3.22
21	202	118 13 57.7	13 46.1	143.26	0.66	.0068740	16.3	16 2 7.31
22	203	119 11 16.2	11 4.4	143.27	0.67	.0068338	17.3	15 58 11.40
23	204	120 8 35.1	8 23.2	143.29	0.67	.0067913	18.2	15 54 15.48
24	205	121 5 54.3	5 42.3	143.31	0.63	.0067468	19.0	15 50 19.57
25	206	122 3 14.0	3 1.8	143.33	0.56	.0067003	19.8	15 46 23.66
26	207	123 0 34.1	0 21.7	143.35	0.46	.0066520	20.5	15 42 27.75
27	208	123 57 54.8	57 42.2	143.37	0.34	.0066019	21.2	15 38 31.84
28	209	124 55 16.0	55 3.3	143.39	0.21	.0065503	21.8	15 34 35.93
29	210	125 52 37.7	52 24.9	143.42	+0.07	.0064972	22.4	15 30 40.02
30	211	126 50 0.0	49 47.1	143.45	−0.06	.0064427	22.9	15 26 44.11
31	212	127 47 23.1	47 10.0	143.48	0.18	.0063870	23.4	15 22 48.20
32	213	128 44 47.1	44 33.8	143.52	−0.29	0.0063301	− 23.9	15 18 52.29

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour
−9s.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 41.4	16 41.2	61 9.0	+0.11	61 8.0	−0.28	11 27.4	2.70	13.4
2	16 39.6	16 36.8	61 2.1	−0.67	60 51.7	1.04	12 32.2	2.68	14.4
3	16 32.8	16 27.8	60 37.1	1.38	60 18.7	1.68	13 35.2	2.56	15.4
4	16 21.8	16 15.2	59 56.9	1.93	59 32.5	2.13	14 34.5	2.36	16.4
5	16 8.0	16 0.4	59 6.0	2.27	58 38.3	2.35	15 28.9	2.16	17.4
6	15 52.7	15 44.9	58 9.9	2.38	57 41.4	2.35	16 18.7	1.99	18.4
7	15 37.4	15 30.0	57 13.5	2.29	56 46.7	2.18	17 5.0	1.87	19.4
8	15 23.1	15 16.7	56 21.2	2.05	55 57.5	1.90	17 48.9	1.79	20.4
9	15 10.7	15 5.4	55 35.7	1.72	55 16.1	1.54	18 31.5	1.76	21.4
10	15 0.7	14 56.6	54 58.8	1.35	54 43.8	1.15	19 13.9	1.78	22.4
11	14 53.2	14 50.4	54 31.2	0.95	54 21.0	0.76	19 57.0	1.82	23.4
12	14 48.2	14 46.7	54 13.1	0.57	54 7.4	0.38	20 41.5	1.89	24.4
13	14 45.7	14 45.3	54 3.8	−0.21	54 2.4	−0.04	21 27.9	1.97	25.4
14	14 45.4	14 46.0	54 2.8	+0.11	54 5.0	+0.25	22 16.1	2.04	26.4
15	14 47.1	14 48.5	54 8.8	0.38	54 14.2	0.50	23 5.8	2.09	27.4
16	14 50.3	14 52.5	54 20.8	0.61	54 28.7	0.70	23 56.3	2.11	28.4
17	14 54.9	14 57.7	54 37.7	0.79	54 47.7	0.87	δ		29.4
18	15 0.6	15 3.8	54 58.6	0.95	55 10.4	1.02	0 46.6	2.08	0.8
19	15 7.3	15 10.9	55 23.0	1.09	55 36.5	1.15	1 36.0	2.03	1.8
20	15 14.8	15 18.9	55 50.7	1.21	56 5.6	1.28	2 24.2	1.98	2.8
21	15 23.1	15 27.6	56 21.3	1.34	56 37.7	1.39	3 11.1	1.93	3.8
22	15 32.3	15 37.1	56 54.8	1.45	57 12.5	1.50	3 57.2	1.92	4.8
23	15 42.0	15 47.1	57 30.7	1.54	57 49.4	1.57	4 43.4	1.94	5.8
24	15 52.3	15 57.5	58 8.4	1.59	58 27.5	1.59	5 30.6	2.00	6.8
25	16 2.7	16 7.7	58 46.4	1.57	59 5.0	1.52	6 19.9	2.12	7.8
26	16 12.5	16 17.1	59 22.7	1.44	59 39.3	1.32	7 12.3	2.27	8.8
27	16 21.1	16 24.6	59 54.2	1.16	60 7.1	0.97	8 8.9	2.44	9.8
28	16 27.4	16 29.5	60 17.5	0.75	60 24.9	+0.49	9 9.2	2.59	10.8
29	16 30.6	16 30.8	60 29.1	+0.20	60 29.7	−0.10	10 12.3	2.65	11.8
30	16 29.9	16 28.1	60 26.6	−0.41	60 19.8	0.73	11 15.7	2.61	12.8
31	16 25.2	16 21.4	60 9.2	1.03	59 55.1	1.31	12 16.8	2.47	13.8
32	16 16.7	16 11.2	59 37.9	−1.56	59 17.8	−1.77	13 14.2	2.29	14.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 34 21.07	2.7120	S. 22 41 57.2	5.141
1	17 37 3.90	2.7155	22 47 0.6	4.970
2	17 39 46.93	2.7188	22 51 53.6	4.797
3	17 42 30.16	2.7220	22 56 36.2	4.622
4	17 45 13.57	2.7252	23 1 8.3	4.447
5	17 47 57.18	2.7283	23 5 29.9	4.272
6	17 50 40.96	2.7310	23 9 41.0	4.097
7	17 53 24.90	2.7336	23 13 41.5	3.920
8	17 56 9.00	2.7360	23 17 31.4	3.742
9	17 58 53.23	2.7384	23 21 10.6	3.563
10	18 1 37.61	2.7406	23 24 39.0	3.383
11	18 4 22.11	2.7426	23 27 56.6	3.204
12	18 7 6.72	2.7444	23 31 3.5	3.024
13	18 9 51.44	2.7461	23 33 59.5	2.843
14	18 12 36.25	2.7475	23 36 44.6	2.661
15	18 15 21.13	2.7487	23 39 18.8	2.478
16	18 18 6.09	2.7499	23 41 42.0	2.296
17	18 20 51.12	2.7509	23 43 54.3	2.113
18	18 23 36.20	2.7516	23 45 55.6	1.930
19	18 26 21.31	2.7521	23 47 45.9	1.747
20	18 29 6.45	2.7525	23 49 25.2	1.563
21	18 31 51.61	2.7528	23 50 53.5	1.379
22	18 34 36.79	2.7528	23 52 10.7	1.195
23	18 37 21.95	2.7526	S. 23 53 16.9	1.011

SUNDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 40 7.10	2.7523	S. 23 54 12.0	0.827
1	18 42 52.23	2.7518	23 54 56.1	0.642
2	18 45 37.32	2.7510	23 55 29.1	0.458
3	18 48 22.35	2.7502	23 55 51.1	0.275
4	18 51 7.34	2.7493	23 56 2.1	−0.092
5	18 53 52.26	2.7480	23 56 2.1	+0.092
6	18 56 37.10	2.7465	23 55 51.1	0.275
7	18 59 21.84	2.7449	23 55 29.1	0.457
8	19 2 6.48	2.7431	23 54 56.2	0.640
9	19 4 51.01	2.7412	23 54 12.3	0.822
10	19 7 35.42	2.7390	23 53 17.5	1.004
11	19 10 19.69	2.7368	23 52 11.8	1.185
12	19 13 3.83	2.7343	23 50 55.3	1.366
13	19 15 47.81	2.7316	23 49 27.9	1.546
14	19 18 31.63	2.7288	23 47 49.8	1.724
15	19 21 15.27	2.7257	23 46 1.0	1.903
16	19 23 58.72	2.7226	23 44 1.5	2.081
17	19 26 41.98	2.7194	23 41 51.3	2.258
18	19 29 25.04	2.7160	23 39 30.5	2.434
19	19 32 7.89	2.7122	23 36 59.2	2.609
20	19 34 50.51	2.7083	23 34 17.4	2.784
21	19 37 32.89	2.7044	23 31 25.1	2.957
22	19 40 15.04	2.7003	23 28 22.5	3.130
23	19 42 56.93	2.6960	23 25 9.5	3.302
24	19 45 38.56	2.6917	S. 23 21 46.2	3.472

MONDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 45 38.56	2.6917	S. 23 21 46.2	3.472
1	19 48 19.93	2.6872	23 18 12.8	3.642
2	19 51 1.02	2.6825	23 14 29.2	3.810
3	19 53 41.83	2.6777	23 10 35.6	3.977
4	19 56 22.34	2.6726	23 6 32.0	4.143
5	19 59 2.54	2.6674	23 2 18.5	4.306
6	20 1 42.43	2.6621	22 57 55.1	4.472
7	20 4 22.00	2.6569	22 53 21.9	4.633
8	20 7 1.26	2.6515	22 48 39.1	4.793
9	20 9 40.18	2.6459	22 43 46.7	4.953
10	20 12 18.76	2.6401	22 38 44.7	5.112
11	20 14 56.99	2.6342	22 33 33.3	5.268
12	20 17 34.87	2.6283	22 28 12.6	5.423
13	20 20 12.39	2.6223	22 22 42.6	5.577
14	20 22 49.54	2.6161	22 17 3.4	5.729
15	20 25 26.32	2.6099	22 11 15.1	5.880
16	20 28 2.73	2.6036	22 5 17.8	6.028
17	20 30 38.75	2.5971	21 59 11.7	6.175
18	20 33 14.38	2.5906	21 52 56.8	6.322
19	20 35 49.62	2.5840	21 46 33.1	6.467
20	20 38 24.46	2.5773	21 40 0.7	6.611
21	20 40 58.89	2.5705	21 33 19.8	6.752
22	20 43 32.92	2.5637	21 26 30.5	6.891
23	20 46 6.53	2.5567	S. 21 19 32.9	7.028

TUESDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 48 39.72	2.5497	S. 21 12 27.1	7.164
1	20 51 12.50	2.5427	21 5 13.2	7.299
2	20 53 44.85	2.5356	20 57 51.2	7.433
3	20 56 16.77	2.5284	20 50 21.2	7.564
4	20 58 48.26	2.5212	20 42 43.5	7.693
5	21 1 19.32	2.5140	20 34 58.1	7.821
6	21 3 49.94	2.5066	20 27 5.0	7.947
7	21 6 20.11	2.4993	20 19 4.4	8.072
8	21 8 49.85	2.4920	20 10 56.4	8.194
9	21 11 19.15	2.4845	20 2 41.1	8.315
10	21 13 48.00	2.4771	19 54 18.6	8.434
11	21 16 16.40	2.4696	19 45 49.0	8.551
12	21 18 44.35	2.4620	19 37 12.5	8.666
13	21 21 11.85	2.4545	19 28 29.1	8.780
14	21 23 38.90	2.4469	19 19 38.9	8.892
15	21 26 5.48	2.4394	19 10 42.0	9.002
16	21 28 31.62	2.4318	19 1 38.6	9.111
17	21 30 57.30	2.4243	18 52 28.7	9.218
18	21 33 22.53	2.4167	18 43 12.4	9.323
19	21 35 47.29	2.4090	18 33 49.9	9.426
20	21 38 11.61	2.4014	18 24 21.3	9.537
21	21 40 35.47	2.3938	18 14 46.7	9.626
22	21 42 58.86	2.3862	18 5 6.2	9.724
23	21 45 21.80	2.3786	17 55 19.8	9.822
24	21 47 44.29	2.3710	S. 17 45 27.6	9.917

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 47 44.29	2.3710	S. 17 45 27.6	9.917
1	21 50 6.32	2.3634	17 35 29.8	10.008
2	21 52 27.90	2.3559	17 25 26.6	10.098
3	21 54 49.03	2.3483	17 15 18.0	10.187
4	21 57 9.70	2.3408	17 5 4.1	10.275
5	21 59 29.92	2.3333	16 54 45.0	10.362
6	22 1 49.70	2.3259	16 44 20.7	10.447
7	22 4 9.03	2.3184	16 33 51.4	10.528
8	22 6 27.91	2.3110	16 23 17.3	10.608
9	22 8 46.35	2.3035	16 12 38.4	10.687
10	22 11 4.33	2.2961	16 1 54.8	10.765
11	22 13 21.88	2.2888	15 51 6.6	10.842
12	22 15 38.99	2.2815	15 40 13.8	10.917
13	22 17 55.66	2.2743	15 29 16.6	10.988
14	22 20 11.91	2.2671	15 18 15.2	11.058
15	22 22 27.71	2.2599	15 7 9.6	11.127
16	22 24 43.09	2.2528	14 55 59.9	11.195
17	22 26 58.05	2.2457	14 44 46.2	11.262
18	22 29 12.58	2.2386	14 33 28.5	11.327
19	22 31 26.68	2.2316	14 22 7.0	11.389
20	22 33 40.38	2.2248	14 10 41.8	11.450
21	22 35 53.66	2.2179	13 59 13.0	11.510
22	22 38 6.52	2.2108	13 47 40.6	11.569
23	22 40 18.96	2.2040	S. 13 36 4.7	11.626

THURSDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 42 31.01	2.1975	S. 13 24 25.5	11.681
1	22 44 42.66	2.1909	13 12 43.0	11.734
2	22 46 53.91	2.1842	13 0 57.4	11.787
3	22 49 4.75	2.1776	12 49 8.6	11.838
4	22 51 15.21	2.1711	12 37 16.8	11.888
5	22 53 25.28	2.1647	12 25 22.1	11.936
6	22 55 34.97	2.1582	12 13 24.5	11.982
7	22 57 44.27	2.1519	12 1 24.2	12.028
8	22 59 53.20	2.1457	11 49 21.2	12.072
9	23 2 1.75	2.1395	11 37 15.6	12.114
10	23 4 9.94	2.1333	11 25 7.5	12.155
11	23 6 17.75	2.1272	11 12 57.0	12.195
12	23 8 25.20	2.1213	11 0 44.1	12.234
13	23 10 32.30	2.1154	10 48 28.9	12.271
14	23 12 39.05	2.1095	10 36 11.6	12.307
15	23 14 45.44	2.1037	10 23 52.1	12.342
16	23 16 51.49	2.0980	10 11 30.6	12.375
17	23 18 57.20	2.0923	9 59 7.1	12.407
18	23 21 2.57	2.0866	9 46 41.8	12.437
19	23 23 7.60	2.0811	9 34 14.7	12.467
20	23 25 12.31	2.0758	9 21 45.8	12.496
21	23 27 16.70	2.0705	9 9 15.2	12.523
22	23 29 20.77	2.0651	8 56 43.0	12.549
23	23 31 24.51	2.0598	8 44 9.3	12.573
24	23 33 27.95	2.0548	S. 8 31 34.2	12.597

FRIDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 33 27.95	2.0548	S. 8 31 34.2	12.597
1	23 35 31.09	2.0497	8 18 57.7	12.619
2	23 37 33.92	2.0447	8 6 19.9	12.641
3	23 39 36.45	2.0397	7 53 40.8	12.662
4	23 41 38.68	2.0348	7 41 0.5	12.681
5	23 43 40.63	2.0301	7 28 19.1	12.698
6	23 45 42.30	2.0255	7 15 36.7	12.715
7	23 47 43.69	2.0209	7 2 53.3	12.731
8	23 49 44.80	2.0163	6 50 9.0	12.746
9	23 51 45.64	2.0117	6 37 23.8	12.760
10	23 53 46.20	2.0073	6 24 37.8	12.772
11	23 55 46.51	2.0030	6 11 51.1	12.784
12	23 57 46.56	1.9988	5 59 3.7	12.795
13	23 59 46.36	1.9946	5 46 15.7	12.804
14	0 1 45.91	1.9905	5 33 27.2	12.812
15	0 3 45.22	1.9865	5 20 38.2	12.820
16	0 5 44.29	1.9825	5 7 48.8	12.827
17	0 7 43.12	1.9786	4 54 59.0	12.833
18	0 9 41.72	1.9747	4 42 8.8	12.838
19	0 11 40.09	1.9710	4 29 18.4	12.842
20	0 13 38.25	1.9675	4 16 27.8	12.845
21	0 15 36.19	1.9639	4 3 37.0	12.847
22	0 17 33.91	1.9603	3 50 46.1	12.848
23	0 19 31.43	1.9569	S. 3 37 55.2	12.847

SATURDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 21 28.74	1.9536	S. 3 25 4.4	12.847
1	0 23 25.86	1.9503	3 12 13.6	12.846
2	0 25 22.78	1.9472	2 59 22.9	12.843
3	0 27 19.52	1.9441	2 46 32.4	12.840
4	0 29 16.07	1.9410	2 33 42.1	12.836
5	0 31 12.43	1.9380	2 20 52.1	12.831
6	0 33 8.62	1.9351	2 8 2.4	12.825
7	0 35 4.65	1.9323	1 55 13.1	12.818
8	0 37 0.50	1.9295	1 42 24.2	12.812
9	0 38 56.19	1.9268	1 29 35.7	12.804
10	0 40 51.72	1.9243	1 16 47.7	12.794
11	0 42 47.10	1.9218	1 4 0.4	12.783
12	0 44 42.33	1.9194	0 51 13.7	12.772
13	0 46 37.42	1.9170	0 38 27.7	12.761
14	0 48 32.36	1.9146	0 25 42.4	12.750
15	0 50 27.17	1.9124	0 12 57.7	12.738
16	0 52 21.85	1.9102	S. 0 0 13.8	12.724
17	0 54 16.40	1.9080	N. 0 12 29.2	12.708
18	0 56 10.82	1.9060	0 25 11.2	12.692
19	0 58 5.13	1.9041	0 37 52.3	12.677
20	0 59 59.32	1.9022	0 50 32.5	12.661
21	1 1 53.40	1.9004	1 3 11.6	12.643
22	1 3 47.37	1.8988	1 15 49.7	12.625
23	1 5 41.25	1.8971	1 28 26.6	12.606
24	1 7 35.02	1.8954	N. 1 41 2.4	12.587

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 7 35.02	1.8954	N. 1 41 2.4	12.587
1	1 9 28.70	1.8939	1 53 37.0	12.566
2	1 11 22.29	1.8925	2 6 10.3	12.545
3	1 13 15.80	1.8912	2 18 42.4	12.524
4	1 15 9.23	1.8899	2 31 13.2	12.502
5	1 17 2.58	1.8887	2 43 42.6	12.478
6	1 18 55.85	1.8875	2 56 10.5	12.453
7	1 20 49.07	1.8863	3 8 37.0	12.429
8	1 22 42.21	1.8852	3 21 2.0	12.405
9	1 24 35.29	1.8842	3 33 25.6	12.380
10	1 26 28.32	1.8834	3 45 47.6	12.353
11	1 28 21.30	1.8826	3 58 8.0	12.326
12	1 30 14.23	1.8818	4 10 26.7	12.298
13	1 32 7.12	1.8811	4 22 43.7	12.269
14	1 33 59.96	1.8804	4 34 59.0	12.241
15	1 35 52.77	1.8798	4 47 12.6	12.212
16	1 37 45.54	1.8793	4 59 24.4	12.181
17	1 39 38.29	1.8789	5 11 34.3	12.149
18	1 41 31.01	1.8786	5 23 42.3	12.118
19	1 43 23.72	1.8783	5 35 48.4	12.086
20	1 45 16.40	1.8779	5 47 52.6	12.052
21	1 47 9.07	1.8777	5 59 54.7	12.018
22	1 49 1.73	1.8777	6 11 54.8	11.985
23	1 50 54.39	1.8776	N. 6 23 52.9	11.951

MONDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 52 47.04	1.8775	N. 6 35 48.9	11.915
1	1 54 39.69	1.8776	6 47 42.7	11.879
2	1 56 32.35	1.8777	6 59 34.4	11.842
3	1 58 25.02	1.8780	7 11 23.8	11.805
4	2 0 17.71	1.8783	7 23 11.0	11.767
5	2 2 10.41	1.8785	7 34 55.9	11.728
6	2 4 3.13	1.8789	7 46 38.4	11.689
7	2 5 55.88	1.8793	7 58 18.6	11.650
8	2 7 48.65	1.8797	8 9 56.4	11.609
9	2 9 41.45	1.8803	8 21 31.7	11.568
10	2 11 34.29	1.8809	8 33 4.5	11.527
11	2 13 27.16	1.8815	8 44 34.9	11.485
12	2 15 20.07	1.8822	8 56 2.7	11.442
13	2 17 13.03	1.8830	9 7 27.9	11.398
14	2 19 6.03	1.8838	9 18 50.5	11.355
15	2 20 59.09	1.8848	9 30 10.5	11.311
16	2 22 52.21	1.8857	9 41 27.8	11.265
17	2 24 45.38	1.8866	9 52 42.3	11.218
18	2 26 38.61	1.8876	10 3 54.0	11.172
19	2 28 31.90	1.8888	10 15 2.9	11.125
20	2 30 25.26	1.8900	10 26 9.0	11.078
21	2 32 18.69	1.8913	10 37 12.3	11.031
22	2 34 12.21	1.8925	10 48 12.7	10.981
23	2 36 5.79	1.8937	10 59 10.0	10.930
24	2 37 59.45	1.8950	N.11 10 4.3	10.880

TUESDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 37 59.45	1.8950	N.11 10 4.3	10.880
1	2 39 53.19	1.8964	11 20 55.6	10.830
2	2 41 47.02	1.8979	11 31 43.9	10.779
3	2 43 40.94	1.8995	11 42 29.1	10.727
4	2 45 34.96	1.9011	11 53 11.1	10.674
5	2 47 29.07	1.9026	12 3 50.0	10.622
6	2 49 23.27	1.9042	12 14 25.7	10.568
7	2 51 17.57	1.9059	12 24 58.1	10.513
8	2 53 11.98	1.9077	12 35 27.2	10.458
9	2 55 6.50	1.9095	12 45 53.1	10.403
10	2 57 1.13	1.9113	12 56 15.6	10.347
11	2 58 55.86	1.9131	13 6 34.7	10.290
12	3 0 50.70	1.9150	13 16 50.4	10.232
13	3 2 45.66	1.9170	13 27 2.6	10.174
14	3 4 40.74	1.9190	13 37 11.3	10.116
15	3 6 35.94	1.9211	13 47 16.5	10.057
16	3 8 31.27	1.9232	13 57 18.1	9.996
17	3 10 26.73	1.9253	14 7 16.0	9.935
18	3 12 22.31	1.9274	14 17 10.3	9.874
19	3 14 18.02	1.9297	14 27 0.9	9.812
20	3 16 13.87	1.9319	14 36 47.8	9.751
21	3 18 9.85	1.9341	14 46 31.0	9.688
22	3 20 5.97	1.9365	14 56 10.4	9.624
23	3 22 2.23	1.9389	N.15 5 45.9	9.558

WEDNESDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 23 58.63	1.9413	N.15 15 17.4	9.493
1	3 25 55.18	1.9437	15 24 45.0	9.428
2	3 27 51.87	1.9461	15 34 8.8	9.363
3	3 29 48.71	1.9486	15 43 28.6	9.297
4	3 31 45.70	1.9511	15 52 44.4	9.229
5	3 33 42.84	1.9537	16 1 56.1	9.160
6	3 35 40.14	1.9562	16 11 3.6	9.091
7	3 37 37.59	1.9588	16 20 7.0	9.022
8	3 39 35.20	1.9615	16 29 6.2	8.952
9	3 41 32.97	1.9642	16 38 1.2	8.882
10	3 43 30.90	1.9669	16 46 52.0	8.811
11	3 45 28.99	1.9696	16 55 38.5	8.738
12	3 47 27.25	1.9723	17 4 20.6	8.665
13	3 49 25.67	1.9751	17 12 58.3	8.592
14	3 51 24.26	1.9779	17 21 31.6	8.518
15	3 53 23.02	1.9807	17 30 0.5	8.445
16	3 55 21.95	1.9836	17 38 25.0	8.370
17	3 57 21.05	1.9864	17 46 44.9	8.293
18	3 59 20.32	1.9892	17 55 0.2	8.217
19	4 1 19.75	1.9921	18 3 10.9	8.140
20	4 3 19.37	1.9951	18 11 17.0	8.062
21	4 5 19.16	1.9980	18 19 18.4	7.984
22	4 7 19.13	2.0010	18 27 15.1	7.905
23	4 9 19.28	2.0039	18 35 7.0	7.826
24	4 11 19.60	2.0068	N.18 42 54.2	7.746

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 11 19.60	2.0068	N.18 42 54.2	7.746
1	4 13 20.10	2.0099	18 50 36.5	7.665
2	4 15 20.79	2.0129	18 58 14.0	7.584
3	4 17 21.65	2.0159	19 5 46.6	7.502
4	4 19 22.69	2.0189	19 13 14.2	7.418
5	4 21 23.91	2.0219	19 20 36.7	7.333
6	4 23 25.31	2.0249	19 27 54.2	7.250
7	4 25 26.90	2.0280	19 35 6.7	7.166
8	4 27 28.67	2.0311	19 42 14.1	7.081
9	4 29 30.63	2.0341	19 49 16.4	6.995
10	4 31 32.77	2.0371	19 56 13.5	6.907
11	4 33 35.09	2.0403	20 3 5.3	6.820
12	4 35 37.60	2.0434	20 9 51.9	6.732
13	4 37 40.29	2.0464	20 16 33.2	6.644
14	4 39 43.16	2.0494	20 23 9.2	6.555
15	4 41 46.22	2.0525	20 29 39.8	6.465
16	4 43 49.46	2.0555	20 36 5.0	6.375
17	4 45 52.88	2.0585	20 42 24.8	6.285
18	4 47 56.48	2.0616	20 48 39.2	6.194
19	4 50 0.27	2.0647	20 54 48.1	6.102
20	4 52 4.24	2.0677	21 0 51.4	6.008
21	4 54 8.39	2.0708	21 6 49.1	5.914
22	4 56 12.73	2.0738	21 12 41.1	5.820
23	4 58 17.24	2.0767	N.21 18 27.5	5.726

FRIDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 0 21.93	2.0797	N.21 24 8.2	5.631
1	5 2 26.80	2.0826	21 29 43.2	5.535
2	5 4 31.85	2.0856	21 35 12.4	5.438
3	5 6 37.08	2.0886	21 40 35.8	5.342
4	5 8 42.48	2.0915	21 45 53.4	5.244
5	5 10 48.06	2.0944	21 51 5.1	5.147
6	5 12 53.81	2.0973	21 56 11.0	5.048
7	5 14 59.73	2.1002	22 1 10.9	4.948
8	5 17 5.83	2.1031	22 6 4.8	4.848
9	5 19 12.10	2.1059	22 10 52.7	4.748
10	5 21 18.54	2.1086	22 15 34.6	4.647
11	5 23 25.14	2.1114	22 20 10.4	4.546
12	5 25 31.91	2.1142	22 24 40.1	4.444
13	5 27 38.84	2.1170	22 29 3.7	4.342
14	5 29 45.94	2.1197	22 33 21.1	4.238
15	5 31 53.20	2.1223	22 37 32.3	4.135
16	5 34 0.62	2.1249	22 41 37.3	4.031
17	5 36 8.19	2.1275	22 45 36.0	3.926
18	5 38 15.92	2.1300	22 49 28.4	3.821
19	5 40 23.80	2.1326	22 53 14.5	3.716
20	5 42 31.83	2.1351	22 56 54.3	3.610
21	5 44 40.02	2.1376	23 0 27.7	3.503
22	5 46 48.35	2.1400	23 3 54.7	3.396
23	5 48 56.82	2.1424	23 7 15.2	3.287
24	5 51 5.44	2.1449	N.23 10 29.2	3.178

SATURDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 51 5.44	2.1448	N.23 10 29.2	3.179
1	5 53 14.20	2.1471	23 13 36.7	3.071
2	5 55 23.09	2.1494	23 16 37.7	2.962
3	5 57 32.12	2.1517	23 19 32.2	2.854
4	5 59 41.30	2.1539	23 22 20.2	2.745
5	6 1 50.59	2.1559	23 25 1.6	2.635
6	6 4 0.01	2.1580	23 27 36.4	2.524
7	6 6 9.56	2.1601	23 30 4.5	2.413
8	6 8 19.23	2.1621	23 32 25.9	2.302
9	6 10 29.02	2.1642	23 34 40.7	2.191
10	6 12 38.94	2.1661	23 36 48.8	2.078
11	6 14 48.96	2.1679	23 38 50.1	1.966
12	6 16 59.09	2.1698	23 40 44.7	1.853
13	6 19 9.33	2.1716	23 42 32.5	1.740
14	6 21 19.68	2.1734	23 44 13.5	1.627
15	6 23 30.14	2.1751	23 45 47.7	1.513
16	6 25 40.69	2.1766	23 47 15.1	1.399
17	6 27 51.33	2.1781	23 48 35.6	1.285
18	6 30 2.06	2.1797	23 49 49.3	1.171
19	6 32 12.90	2.1812	23 50 56.1	1.056
20	6 34 23.82	2.1826	23 51 56.0	0.941
21	6 36 34.82	2.1839	23 52 49.0	0.825
22	6 38 45.89	2.1852	23 53 35.0	0.709
23	6 40 57.05	2.1865	N.23 54 14.1	0.594

SUNDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 43 8.28	2.1877	N.23 54 46.3	0.478
1	6 45 19.58	2.1889	23 55 11.5	0.362
2	6 47 30.94	2.1900	23 55 29.7	0.246
3	6 49 42.38	2.1911	23 55 41.0	0.130
4	6 51 53.87	2.1920	23 55 45.3	+0.013
5	6 54 5.41	2.1929	23 55 42.6	−0.104
6	6 56 17.00	2.1938	23 55 32.8	0.221
7	6 58 28.66	2.1947	23 55 16.0	0.339
8	7 0 40.36	2.1954	23 54 52.2	0.456
9	7 2 52.10	2.1959	23 54 21.3	0.573
10	7 5 3.87	2.1966	23 53 43.4	0.690
11	7 7 15.69	2.1972	23 52 58.5	0.807
12	7 9 27.53	2.1976	23 52 6.5	0.925
13	7 11 39.40	2.1981	23 51 7.5	1.043
14	7 13 51.30	2.1986	23 50 1.4	1.161
15	7 16 3.23	2.1988	23 48 48.2	1.278
16	7 18 15.16	2.1990	23 47 28.0	1.396
17	7 20 27.11	2.1993	23 46 0.7	1.513
18	7 22 39.07	2.1994	23 44 26.4	1.631
19	7 24 51.04	2.1995	23 42 45.0	1.749
20	7 27 3.01	2.1997	23 40 56.5	1.867
21	7 29 15.00	2.1997	23 39 1.0	1.984
22	7 31 26.97	2.1994	23 36 58.4	2.102
23	7 33 38.93	2.1993	23 34 48.8	2.219
24	7 35 50.88	2.1991	N.23 32 32.2	2.336

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 17.					**WEDNESDAY 19.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 35 50.88	2.1991	N.23 32 32.2	2.336	0	9 20 14.60	2.1356	N.19 30 1.4	7.618
1	7 38 2.82	2.1988	23 30 8.5	2.453	1	9 22 22.67	2.1335	19 22 21.4	7.716
2	7 40 14.74	2.1986	23 27 37.8	2.571	2	9 24 30.62	2.1314	19 14 35.5	7.815
3	7 42 26.65	2.1982	23 25 0.0	2.688	3	9 26 38.44	2.1293	19 6 43.6	7.913
4	7 44 38.53	2.1978	23 22 15.2	2.804	4	9 28 46.14	2.1272	18 58 45.9	8.009
5	7 46 50.39	2.1973	23 19 23.5	2.920	5	9 30 53.71	2.1251	18 50 42.5	8.104
6	7 49 2.21	2.1968	23 16 24.8	3.037	6	9 33 1.15	2.1230	18 42 33.4	8.198
7	7 51 14.01	2.1963	23 13 19.1	3.153	7	9 35 8.47	2.1209	18 34 18.7	8.292
8	7 53 25.76	2.1956	23 10 6.4	3.269	8	9 37 15.65	2.1187	18 25 58.3	8.387
9	7 55 37.48	2.1950	23 6 46.8	3.385	9	9 39 22.71	2.1166	18 17 32.2	8.481
10	7 57 49.15	2.1942	23 3 20.2	3.501	10	9 41 29.64	2.1145	18 9 0.6	8.573
11	8 0 0.78	2.1934	22 59 46.7	3.617	11	9 43 36.44	2.1123	18 0 23.5	8.664
12	8 2 12.35	2.1926	22 56 6.2	3.732	12	9 45 43.11	2.1100	17 51 40.9	8.755
13	8 4 23.87	2.1917	22 52 18.8	3.847	13	9 47 49.65	2.1079	17 42 52.9	8.846
14	8 6 35.35	2.1908	22 48 24.6	3.961	14	9 49 56.06	2.1058	17 33 59.5	8.936
15	8 8 46.76	2.1897	22 44 23.5	4.075	15	9 52 2.35	2.1037	17 25 0.6	9.027
16	8 10 58.11	2.1886	22 40 15.6	4.189	16	9 54 8.51	2.1016	17 15 56.4	9.113
17	8 13 9.39	2.1875	22 36 0.8	4.303	17	9 56 14.54	2.0994	17 6 47.0	9.200
18	8 15 20.61	2.1865	22 31 39.2	4.417	18	9 58 20.44	2.0973	16 57 32.4	9.287
19	8 17 31.77	2.1853	22 27 10.8	4.530	19	10 0 26.21	2.0952	16 48 12.6	9.373
20	8 19 42.85	2.1840	22 22 35.6	4.642	20	10 2 31.86	2.0931	16 38 47.6	9.459
21	8 21 53.85	2.1827	22 17 53.7	4.755	21	10 4 37.38	2.0910	16 29 17.5	9.543
22	8 24 4.77	2.1814	22 13 5.0	4.867	22	10 6 42.78	2.0890	16 19 42.4	9.627
23	8 26 15.63	2.1801	N.22 8 9.6	4.979	23	10 8 48.05	2.0868	N.16 10 2.3	9.710
	TUESDAY 18.					**THURSDAY 20.**			
0	8 28 26.39	2.1787	N.22 3 7.5	5.091	0	10 10 53.20	2.0848	N.16 0 17.2	9.792
1	8 30 37.07	2.1772	21 57 58.7	5.202	1	10 12 58.23	2.0827	15 50 27.2	9.874
2	8 32 47.66	2.1757	21 52 43.3	5.312	2	10 15 3.13	2.0807	15 40 32.3	9.955
3	8 34 58.16	2.1743	21 47 21.3	5.422	3	10 17 7.91	2.0787	15 30 32.6	10.035
4	8 37 8.58	2.1728	21 41 52.7	5.531	4	10 19 12.57	2.0767	15 20 28.1	10.114
5	8 39 18.90	2.1712	21 36 17.6	5.640	5	10 21 17.11	2.0747	15 10 18.9	10.192
6	8 41 29.12	2.1695	21 30 35.9	5.749	6	10 23 21.54	2.0729	15 0 5.1	10.269
7	8 43 39.24	2.1679	21 24 47.7	5.857	7	10 25 25.86	2.0709	14 49 46.6	10.347
8	8 45 49.26	2.1662	21 18 53.0	5.965	8	10 27 30.05	2.0689	14 39 23.5	10.423
9	8 47 59.18	2.1645	21 12 51.9	6.073	9	10 29 34.13	2.0670	14 28 55.8	10.499
10	8 50 9.01	2.1628	21 6 44.3	6.180	10	10 31 38.09	2.0651	14 18 23.6	10.573
11	8 52 18.72	2.1609	21 0 30.3	6.286	11	10 33 41.94	2.0634	14 7 47.0	10.647
12	8 54 28.31	2.1590	20 54 10.0	6.392	12	10 35 45.69	2.0616	13 57 6.0	10.719
13	8 56 37.80	2.1572	20 47 43.3	6.497	13	10 37 49.33	2.0597	13 46 20.7	10.791
14	8 58 47.18	2.1555	20 41 10.3	6.602	14	10 39 52.86	2.0580	13 35 31.1	10.863
15	9 0 56.46	2.1536	20 34 31.1	6.706	15	10 41 56.29	2.0563	13 24 37.2	10.934
16	9 3 5.61	2.1516	20 27 45.6	6.810	16	10 43 59.62	2.0546	13 13 39.0	11.004
17	9 5 14.65	2.1497	20 20 53.9	6.913	17	10 46 2.84	2.0529	13 2 36.7	11.072
18	9 7 23.57	2.1478	20 13 56.1	7.015	18	10 48 5.97	2.0514	12 51 30.4	11.140
19	9 9 32.38	2.1458	20 6 52.1	7.117	19	10 50 9.01	2.0498	12 40 20.0	11.208
20	9 11 41.06	2.1438	19 59 42.0	7.218	20	10 52 11.95	2.0482	12 29 5.5	11.275
21	9 13 49.63	2.1418	19 52 25.9	7.319	21	10 54 14.79	2.0466	12 17 47.0	11.341
22	9 15 58.07	2.1397	19 45 3.7	7.420	22	10 56 17.54	2.0451	12 6 24.6	11.405
23	9 18 6.39	2.1378	19 37 35.5	7.519	23	10 58 20.20	2.0437	11 54 58.4	11.468
24	9 20 14.60	2.1356	N.19 30 1.4	7.618	24	11 0 22.78	2.0423	N.11 43 28.5	11.530

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 0 22.78	2.0423	N. 11 43 28.5	11.530
1	11 2 25.27	2.0409	11 31 54.8	11.593
2	11 4 27.68	2.0396	11 20 17.3	11.655
3	11 6 30.02	2.0383	11 8 36.2	11.715
4	11 8 32.38	2.0370	10 56 51.5	11.774
5	11 10 34.46	2.0357	10 45 3.3	11.833
6	11 12 36.57	2.0346	10 33 11.5	11.891
7	11 14 38.62	2.0335	10 21 16.3	11.948
8	11 16 40.60	2.0324	10 9 17.7	12.005
9	11 18 42.51	2.0313	9 57 15.7	12.061
10	11 20 44.36	2.0303	9 45 10.4	12.115
11	11 22 46.15	2.0294	9 33 1.9	12.168
12	11 24 47.89	2.0286	9 20 50.2	12.221
13	11 26 49.58	2.0277	9 8 35.4	12.273
14	11 28 51.22	2.0269	8 56 17.5	12.324
15	11 30 52.81	2.0261	8 43 56.5	12.375
16	11 32 54.35	2.0254	8 31 32.5	12.424
17	11 34 55.86	2.0248	8 19 5.6	12.472
18	11 36 57.33	2.0243	8 6 35.9	12.519
19	11 38 58.78	2.0238	7 54 3.4	12.565
20	11 41 0.18	2.0233	7 41 28.1	12.612
21	11 43 1.56	2.0228	7 28 50.0	12.658
22	11 45 2.91	2.0223	7 16 9.2	12.702
23	11 47 4.24	2.0220	N. 7 3 25.8	12.744

SATURDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 49 5.55	2.0217	N. 6 50 39.9	12.786
1	11 51 6.85	2.0215	6 37 51.5	12.827
2	11 53 8.14	2.0214	6 25 0.7	12.867
3	11 55 9.42	2.0213	6 12 7.5	12.907
4	11 57 10.69	2.0213	5 59 11.9	12.946
5	11 59 11.97	2.0213	5 46 14.0	12.983
6	12 1 13.25	2.0214	5 33 13.9	13.020
7	12 3 14.54	2.0216	5 20 11.6	13.056
8	12 5 15.84	2.0217	5 7 7.2	13.090
9	12 7 17.15	2.0219	4 54 0.8	13.124
10	12 9 18.47	2.0223	4 40 52.4	13.157
11	12 11 19.82	2.0227	4 27 42.0	13.189
12	12 13 21.19	2.0231	4 14 29.7	13.220
13	12 15 22.59	2.0237	4 1 15.6	13.250
14	12 17 24.03	2.0243	3 47 59.7	13.279
15	12 19 25.50	2.0249	3 34 42.1	13.307
16	12 21 27.01	2.0255	3 21 22.8	13.335
17	12 23 28.56	2.0263	3 8 1.9	13.361
18	12 25 30.16	2.0272	2 54 39.5	13.386
19	12 27 31.83	2.0281	2 41 15.6	13.410
20	12 29 33.54	2.0290	2 27 50.3	13.433
21	12 31 35.31	2.0300	2 14 23.7	13.455
22	12 33 37.15	2.0311	2 0 55.7	13.477
23	12 35 39.05	2.0322	1 47 26.4	13.498
24	12 37 41.02	2.0335	N. 1 33 55.9	13.517

SUNDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 37 41.02	2.0335	N. 1 33 55.9	13.517
1	12 39 43.07	2.0348	1 20 24.3	13.535
2	12 41 45.20	2.0362	1 6 51.7	13.552
3	12 43 47.42	2.0377	0 53 18.1	13.568
4	12 45 49.73	2.0392	0 39 43.5	13.584
5	12 47 52.12	2.0407	0 26 8.0	13.599
6	12 49 54.61	2.0424	N. 0 12 31.7	13.612
7	12 51 57.20	2.0442	S. 0 1 5.4	13.624
8	12 53 59.90	2.0460	0 14 43.2	13.635
9	12 56 2.72	2.0478	0 28 21.6	13.645
10	12 58 5.64	2.0497	0 42 0.6	13.654
11	13 0 8.68	2.0517	0 55 40.1	13.662
12	13 2 11.84	2.0537	1 9 20.0	13.668
13	13 4 15.13	2.0558	1 23 0.3	13.674
14	13 6 18.55	2.0580	1 36 40.9	13.679
15	13 8 22.10	2.0603	1 50 21.8	13.683
16	13 10 25.79	2.0627	2 4 2.9	13.686
17	13 12 29.63	2.0652	2 17 44.1	13.687
18	13 14 33.61	2.0677	2 31 25.3	13.687
19	13 16 37.75	2.0703	2 45 6.5	13.687
20	13 18 42.05	2.0730	2 58 47.7	13.685
21	13 20 46.51	2.0757	3 12 28.7	13.682
22	13 22 51.13	2.0784	3 26 9.5	13.677
23	13 24 55.92	2.0812	S. 3 39 50.0	13.672

MONDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 27 0.88	2.0841	S. 3 53 30.1	13.665
1	13 29 6.02	2.0872	4 7 9.8	13.657
2	13 31 11.35	2.0904	4 20 49.0	13.649
3	13 33 16.86	2.0935	4 34 27.7	13.639
4	13 35 22.57	2.0967	4 48 5.7	13.627
5	13 37 28.47	2.1000	5 1 43.0	13.615
6	13 39 34.57	2.1033	5 15 19.5	13.601
7	13 41 40.87	2.1068	5 28 55.1	13.586
8	13 43 47.39	2.1104	5 42 29.8	13.571
9	13 45 54.12	2.1140	5 56 3.6	13.554
10	13 48 1.06	2.1176	6 9 36.3	13.535
11	13 50 8.23	2.1213	6 23 7.8	13.515
12	13 52 15.62	2.1251	6 36 38.1	13.494
13	13 54 23.24	2.1290	6 50 7.1	13.472
14	13 56 31.10	2.1330	7 3 34.7	13.448
15	13 58 39.20	2.1370	7 17 0.9	13.423
16	14 0 47.54	2.1411	7 30 25.5	13.397
17	14 2 56.13	2.1453	7 43 48.5	13.370
18	14 5 4.97	2.1495	7 57 9.9	13.342
19	14 7 14.06	2.1537	8 10 29.5	13.311
20	14 9 23.41	2.1580	8 23 47.2	13.279
21	14 11 33.03	2.1625	8 37 3.0	13.246
22	14 13 42.92	2.1671	8 50 16.8	13.212
23	14 15 53.08	2.1717	9 3 28.5	13.177
24	14 18 3.52	2.1763	S. 9 16 38.1	13.141

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 25.					THURSDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	14 18 3.52	2.1763	S. 9 16 38.1	13.141	0	16 8 53.59	2.4561	S. 18 36 42.4	9.590
1	14 20 14.24	2.1810	9 29 45.4	13.102	1	16 11 21.15	2.4625	18 46 14.4	9.477
2	14 22 25.24	2.1857	9 42 50.4	13.062	2	16 13 49.08	2.4688	18 55 39.6	9.362
3	14 24 36.53	2.1906	9 55 52.9	13.021	3	16 16 17.40	2.4751	19 4 57.8	9.245
4	14 26 48.11	2.1955	10 8 52.9	12.978	4	16 18 46.09	2.4813	19 14 8.9	9.126
5	14 28 59.99	2.2004	10 21 50.3	12.935	5	16 21 15.15	2.4875	19 23 12.9	9.006
6	14 31 12.16	2.2054	10 34 45.1	12.890	6	16 23 44.60	2.4939	19 32 9.6	8.884
7	14 33 24.64	2.2105	10 47 37.1	12.843	7	16 26 14.42	2.5001	19 40 59.0	8.761
8	14 35 37.43	2.2157	11 0 26.3	12.795	8	16 28 44.61	2.5062	19 49 40.9	8.636
9	14 37 50.52	2.2209	11 13 12.5	12.745	9	16 31 15.17	2.5123	19 58 15.3	8.510
10	14 40 3.93	2.2262	11 25 55.7	12.694	10	16 33 46.10	2.5184	20 6 42.1	8.382
11	14 42 17.66	2.2314	11 38 35.8	12.641	11	16 36 17.38	2.5245	20 15 1.1	8.251
12	14 44 31.70	2.2367	11 51 12.7	12.587	12	16 38 49.04	2.5306	20 23 12.2	8.119
13	14 46 46.07	2.2423	12 3 46.3	12.532	13	16 41 21.06	2.5365	20 31 15.4	7.987
14	14 49 0.77	2.2478	12 16 16.5	12.475	14	16 43 53.42	2.5424	20 39 10.6	7.853
15	14 51 15.80	2.2533	12 28 43.3	12.417	15	16 46 26.14	2.5483	20 46 57.7	7.717
16	14 53 31.16	2.2588	12 41 6.5	12.357	16	16 48 59.22	2.5541	20 54 36.6	7.580
17	14 55 46.86	2.2646	12 53 26.1	12.295	17	16 51 32.63	2.5597	21 2 7.3	7.442
18	14 58 2.91	2.2703	13 5 41.9	12.232	18	16 54 6.39	2.5655	21 9 29.6	7.301
19	15 0 19.29	2.2759	13 17 53.9	12.167	19	16 56 40.48	2.5710	21 16 43.4	7.158
20	15 2 36.02	2.2817	13 30 2.0	12.100	20	16 59 14.91	2.5765	21 23 48.6	7.014
21	15 4 53.10	2.2875	13 42 6.0	12.032	21	17 1 49.66	2.5819	21 30 45.1	6.869
22	15 7 10.53	2.2935	13 54 5.9	11.963	22	17 4 24.74	2.5873	21 37 32.9	6.723
23	15 9 28.32	2.2995	S. 14 6 1.6	11.892	23	17 7 0.13	2.5926	S. 21 44 11.9	6.577
	WEDNESDAY 26.					FRIDAY 28.			
0	15 11 46.47	2.3054	S. 14 17 53.0	11.820	0	17 9 35.85	2.5979	S. 21 50 42.1	6.428
1	15 14 4.97	2.3114	14 29 40.0	11.746	1	17 12 11.88	2.6029	21 57 3.3	6.277
2	15 16 23.84	2.3174	14 41 22.5	11.670	2	17 14 48.20	2.6079	22 3 15.4	6.125
3	15 18 43.06	2.3235	14 53 0.4	11.592	3	17 17 24.83	2.6128	22 9 18.3	5.972
4	15 21 2.66	2.3296	15 4 33.6	11.514	4	17 20 1.74	2.6176	22 15 12.0	5.817
5	15 23 22.62	2.3358	15 16 2.1	11.434	5	17 22 38.94	2.6223	22 20 56.4	5.662
6	15 25 42.95	2.3420	15 27 25.7	11.352	6	17 25 16.42	2.6270	22 26 31.5	5.506
7	15 28 3.65	2.3482	15 38 44.3	11.268	7	17 27 54.18	2.6315	22 31 57.1	5.348
8	15 30 24.73	2.3544	15 49 57.8	11.182	8	17 30 32.20	2.6359	22 37 13.2	5.189
9	15 32 46.18	2.3606	16 1 6.1	11.094	9	17 33 10.49	2.6403	22 42 19.8	5.029
10	15 35 8.01	2.3670	16 12 9.1	11.006	10	17 35 49.03	2.6444	22 47 16.7	4.868
11	15 37 30.21	2.3732	16 23 6.8	10.916	11	17 38 27.81	2.6484	22 52 3.9	4.706
12	15 39 52.79	2.3794	16 33 59.0	10.824	12	17 41 6.84	2.6524	22 56 41.4	4.542
13	15 42 15.74	2.3858	16 44 45.6	10.730	13	17 43 46.10	2.6562	23 1 9.0	4.377
14	15 44 39.09	2.3923	16 55 26.6	10.635	14	17 46 25.59	2.6598	23 5 26.7	4.212
15	15 47 2.81	2.3986	17 6 1.8	10.538	15	17 49 5.29	2.6634	23 9 34.4	4.045
16	15 49 26.92	2.4050	17 16 31.1	10.438	16	17 51 45.19	2.6668	23 13 32.1	3.877
17	15 51 51.41	2.4114	17 26 54.4	10.338	17	17 54 25.30	2.6701	23 17 19.7	3.709
18	15 54 16.29	2.4178	17 37 11.7	10.236	18	17 57 5.60	2.6732	23 20 57.2	3.541
19	15 56 41.55	2.4242	17 47 22.8	10.133	19	17 59 46.08	2.6762	23 24 24.6	3.372
20	15 59 7.19	2.4306	17 57 27.6	10.028	20	18 2 26.74	2.6790	23 27 41.8	3.201
21	16 1 33.22	2.4369	18 7 26.1	9.921	21	18 5 7.56	2.6816	23 30 48.7	3.029
22	16 3 59.62	2.4433	18 17 18.1	9.812	22	18 7 48.54	2.6842	23 33 45.3	2.857
23	16 6 26.41	2.4497	18 27 3.6	9.702	23	18 10 29.68	2.6867	23 36 31.5	2.684
24	16 8 53.59	2.4561	S. 18 36 42.4	9.590	24	18 13 10.96	2.6890	S. 23 39 7.3	2.510

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 13 10.96	2.6890	S. 23 39 7.3	2.510
1	18 15 52.37	2.6912	23 41 32.7	2.336
2	18 18 33.90	2.6931	23 43 47.6	2.162
3	18 21 15.54	2.6950	23 45 52.1	1.987
4	18 23 57.29	2.6966	23 47 46.1	1.811
5	18 26 39.13	2.6981	23 49 29.5	1.635
6	18 29 21.06	2.6994	23 51 2.3	1.459
7	18 32 3.06	2.7005	23 52 24.6	1.283
8	18 34 45.12	2.7015	23 53 36.3	1.106
9	18 37 27.24	2.7024	23 54 37.3	0.928
10	18 40 9.41	2.7031	23 55 27.7	0.751
11	18 42 51.61	2.7036	23 56 7.4	0.573
12	18 45 33.84	2.7040	23 56 36.5	0.396
13	18 48 16.09	2.7042	23 56 54.9	0.218
14	18 50 58.34	2.7042	23 57 2.6	−0.040
15	18 53 40.59	2.7041	23 56 59.7	+0.137
16	18 56 22.83	2.7038	23 56 46.1	0.315
17	18 59 5.05	2.7033	23 56 21.9	0.492
18	19 1 47.23	2.7027	23 55 47,0	0.670
19	19 4 29.37	2.7018	23 55 1.5	0.847
20	19 7 11.45	2.7008	23 54 5.3	1.025
21	19 9 53.47	2.6997	23 52 58.5	1.202
22	19 12 35.42	2.6985	23 51 41.1	1.378
23	19 15 17.29	2.6970	S. 23 50 13.1	1.555

SUNDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 17 59.06	2.6953	S. 23 48 34.5	1.731
1	19 20 40.73	2.6936	23 46 45.4	1.906
2	19 23 22.29	2.6917	23 44 45.8	2.081
3	19 26 3.73	2.6897	23 42 35.7	2.255
4	19 28 45.05	2.6874	23 40 15.2	2.428
5	19 31 26.21	2.6840	23 37 44.3	2.601
6	19 34 7.23	2.6824	23 35 3.0	2.774
7	19 36 48.10	2.6797	23 32 11.4	2.946
8	19 39 28.79	2.6767	23 29 9.5	3.117
9	19 42 9.30	2.6738	23 25 57.3	3.288
10	19 44 49.64	2.6707	23 22 34.9	3.457
11	19 47 29.78	2.6673	23 19 2.4	3.625
12	19 50 9.71	2.6638	23 15 19.9	3.793
13	19 52 49.43	2.6601	23 11 27.3	3.960
14	19 55 28.93	2.6564	23 7 24.7	4.127
15	19 58 8.20	2.6526	23 3 12.1	4.292
16	20 0 47.24	2.6486	22 58 49.7	4.455
17	20 3 26.03	2.6444	22 54 17.5	4.617
18	20 6 4.56	2.6402	22 49 35.6	4.779
19	20 8 42.85	2.6358	22 44 44.0	4.940
20	20 11 20.86	2.6312	22 39 42.8	5.099
21	20 13 58.59	2.6266	22 34 32.1	5.257
22	20 16 36.05	2.6220	22 29 12.0	5.414
23	20 19 13.23	2.6171	22 23 42.4	5.571
24	20 21 50.10	2.6120	S. 22 18 3.5	5.725

MONDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 21 50.10	2.6120	S. 22 18 3.5	5.725
1	20 24 26.67	2.6069	22 12 15.4	5.878
2	20 27 2.93	2.6017	22 6 18.1	6.030
3	20 29 38.88	2.5964	22 0 11.8	6.180
4	20 32 14.50	2.5910	21 53 56.5	6.329
5	20 34 49.80	2.5855	21 47 32.3	6.477
6	20 37 24.77	2.5800	21 40 59.2	6.624
7	20 39 59.40	2.5743	21 34 17.4	6.769
8	20 42 33.68	2.5686	21 27 27.0	6.912
9	20 45 7.63	2.5628	21 20 28.0	7.053
10	20 47 41.21	2.5568	21 13 20.6	7.193
11	20 50 14.45	2.5508	21 6 4.8	7.332
12	20 52 47.31	2.5447	20 58 40.7	7.469
13	20 55 19.81	2.5385	20 51 8.5	7.605
14	20 57 51.93	2.5323	20 43 28.1	7.740
15	21 0 23.69	2.5261	20 35 39.7	7.872
16	21 2 55.06	2.5198	20 27 43.4	8.003
17	21 5 26.06	2.5134	20 19 39.3	8.132
18	21 7 56.66	2.5068	20 11 27.6	8.259
19	21 10 26.88	2.5004	20 3 8.3	8.385
20	21 12 56.71	2.4938	19 54 41.4	8.510
21	21 15 26.13	2.4872	19 46 7.1	8.632
22	21 17 55.16	2.4806	19 37 25.5	8.753
23	21 20 23.80	2.4739	S. 19 28 36.7	8.872

TUESDAY, AUGUST 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 22 52.03	2.4671	S. 19 19 40.8	8.989

PHASES OF THE MOON.

		d	h	m
○	Full Moon, . . .	2	1	36.1
☾	Last Quarter, . .	9	1	9.1
●	New Moon, . .	17	5	27.3
☽	First Quarter, . .	24	17	51.1
○	Full Moon, . . .	31	9	16.8

		d	h
☾	Perigee, ...	1	3.2
☾	Apogee, ...	13	15.3
☾	Perigee, ...	29	8.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Mars	W.	77° 20′ 12″	2157	79° 9′ 45″	2156	80° 59′ 19″	2157	82° 48′ 52″	2157
	Spica	W.	62 5 14	2038	63 57 49	2036	65 50 27	2035	67 43 6	2035
	Antares	W.	16 54 52	2328	18 40 10	2268	20 26 56	2226	22 14 45	2192
	Fomalhaut	E.	69 45 15	2208	67 56 59	2212	66 8 50	2220	64 20 52	2228
	α Pegasi	E.	87 32 7	2413	85 48 51	2415	84 5 37	2417	82 22 27	2422
2	Mars	W.	91 55 49	2175	93 44 54	2181	95 33 50	2188	97 22 36	2196
	Spica	W.	77 5 56	2048	78 58 15	2053	80 50 26	2059	82 42 28	2066
	Antares	W.	31 22 58	2117	33 13 31	2113	35 4 11	2111	36 54 54	2111
	Fomalhaut	E.	55 24 54	2295	53 38 47	2314	51 53 8	2337	50 8 2	2361
	α Pegasi	E.	73 49 8	2472	72 7 15	2487	70 25 44	2504	68 44 37	2524
3	Mars	W.	106 23 13	2244	108 10 35	2256	109 57 40	2268	111 44 26	2282
	Spica	W.	91 59 42	2111	93 50 25	2122	95 40 51	2133	97 31 0	2146
	Antares	W.	46 7 43	2132	47 57 53	2140	49 47 51	2149	51 37 36	2159
	Saturn	W.	18 5 24	2066	19 57 15	2076	21 48 51	2086	23 40 11	2098
	Fomalhaut	E.	41 32 43	2533	39 52 16	2581	38 12 55	2635	36 34 47	2695
	α Pegasi	E.	60 26 45	2655	58 49 4	2689	57 12 9	2725	55 36 3	2766
4	Antares	W.	60 42 14	2218	62 30 14	2233	64 17 52	2247	66 5 9	2262
	Saturn	W.	32 52 14	2164	34 41 36	2178	36 30 37	2193	38 19 15	2209
	α Pegasi	E.	47 50 28	3030	46 20 53	3099	44 52 42	3174	43 26 2	3257
	α Arietis	E.	87 39 20	2318	85 53 47	2334	84 8 37	2350	82 23 51	2368
5	Antares	W.	74 55 49	2344	76 40 44	2362	78 25 14	2380	80 9 18	2397
	Saturn	W.	47 16 19	2293	49 2 29	2311	50 48 13	2328	52 33 31	2347
	α Pegasi	E.	36 40 1	3824	35 25 24	3982	34 13 27	4160	33 4 23	4361
	α Arietis	E.	73 46 29	2462	72 4 23	2484	70 22 47	2505	68 41 41	2527
	Aldebaran	E.	104 18 30	2322	102 33 2	2339	100 48 0	2357	99 3 24	2375
	Sun	E.	139 37 37	2618	137 59 7	2638	136 21 3	2656	134 43 24	2675
6	Antares	W.	88 43 14	2489	90 24 43	2507	92 5 46	2527	93 46 22	2545
	Saturn	W.	61 13 24	2438	62 56 4	2457	64 38 18	2475	66 20 6	2494
	α Aquilæ	W.	49 19 35	3853	50 33 43	3803	51 48 42	3763	53 4 24	3725
	α Arietis	E.	60 24 1	2645	58 46 7	2671	57 8 48	2697	55 32 4	2723
	Aldebaran	E.	90 26 58	2467	88 44 58	2487	87 3 27	2505	85 22 21	2524
	Sun	E.	126 41 45	2775	125 6 44	2795	123 32 10	2815	121 58 2	2835
7	Saturn	W.	74 42 39	2585	76 21 55	2603	78 0 46	2621	79 39 12	2638
	α Aquilæ	W.	59 31 2	3606	60 49 30	3592	62 8 13	3581	63 27 8	3572
	α Arietis	E.	47 37 36	2870	46 4 39	2904	44 32 25	2938	43 0 54	2974
	Aldebaran	E.	77 3 18	2616	75 24 45	2635	73 46 36	2652	72 8 51	2669
	Sun	E.	114 13 46	2934	112 42 10	2954	111 10 59	2973	109 40 12	2992
8	Saturn	W.	87 45 39	2722	89 21 50	2738	90 57 40	2753	92 33 10	2769
	α Aquilæ	W.	70 3 29	3555	71 22 53	3555	72 42 16	3557	74 1 37	3561
	Fomalhaut	W.	34 24 52	3350	35 48 6	3320	37 11 54	3297	38 36 9	3277
	α Arietis	E.	35 35 30	3192	34 9 11	3245	32 43 55	3305	31 19 49	3371
	Aldebaran	E.	64 6 0	2755	62 30 33	2771	60 55 27	2787	59 20 42	2802
	Sun	E.	102 12 4	3082	100 43 33	3099	99 15 22	3116	97 47 32	3133
9	Saturn	W.	100 25 47	2839	101 59 24	2852	103 32 44	2865	105 5 48	2877
	α Aquilæ	W.	80 37 11	3588	81 55 58	3596	83 14 37	3603	84 33 8	3612
	Fomalhaut	W.	45 41 52	3225	47 7 32	3220	48 33 18	3216	49 59 8	3214
	α Pegasi	W.	34 23 12	4502	35 27 [illegible]	[illegible]	36 32 31	4296	37 39 27	4313

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Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L of Diff.	XXIh.	P. L. of Diff.
1	Mars	W.	84° 38′ 24″	2159	86° 27′ 53″	2162	88° 17′ 18″	2166	90° 6′ 37″	2170
	Spica	W.	69 35 45	2036	71 28 23	2037	73 20 59	2041	75 13 30	2044
	Antares	W.	24 3 25	2167	25 52 43	2148	27 42 29	2135	29 32 35	2124
	Fomalhaut	E.	62 33 6	2238	60 45 35	2249	58 58 20	2263	57 11 26	2278
	α Pegasi	E.	80 39 24	2429	78 56 30	2437	77 13 48	2447	75 31 20	2458
2	Mars	W.	99 11 10	2204	100 59 32	2212	102 47 41	2223	104 35 35	2233
	Spica	W.	84 34 20	2073	86 26 1	2081	88 17 29	2090	90 8 43	2100
	Antares	W.	38 45 37	2113	40 36 17	2115	42 26 53	2120	44 17 22	2125
	Fomalhaut	E.	48 23 31	2388	46 39 39	2418	44 56 30	2453	43 14 10	2490
	α Pegasi	E.	67 3 57	2545	65 23 47	2569	63 44 9	2596	62 5 8	2624
3	Mars	W.	113 30 52	2296	115 16 58	2311	117 2 42	2326	118 48 4	2342
	Spica	W.	99 20 49	2159	101 10 19	2172	102 59 28	2187	104 48 15	2201
	Antares	W.	53 27 6	2169	55 16 20	2181	57 5 16	2193	58 53 54	2205
	Saturn	W.	25 31 14	2110	27 21 58	2122	29 12 24	2135	31 2 30	2149
	Fomalhaut	E.	34 58 1	2764	33 22 46	2844	31 49 15	2934	30 17 39	3035
	α Pegasi	E.	54 0 51	2811	52 26 37	2859	50 53 26	2911	49 21 21	2968
4	Antares	W.	67 52 4	2278	69 38 36	2294	71 24 44	2310	73 10 29	2327
	Saturn	W.	40 7 29	2225	41 55 19	2242	43 42 44	2259	45 29 44	2276
	α Pegasi	E.	42 1 0	3347	40 37 43	3448	39 16 21	3561	37 57 4	3685
	α Arietis	E.	80 39 30	2385	78 55 34	2404	77 12 5	2423	75 29 3	2443
5	Antares	W.	81 52 57	2415	83 36 11	2433	85 18 58	2452	87 1 19	2470
	Saturn	W.	54 18 22	2365	56 2 47	2383	57 46 46	2402	59 30 18	2420
	α Pegasi	E.	31 58 26	4590	30 55 53	4855	29 57 2	5160	29 2 10	5513
	α Arietis	E.	67 1 6	2550	65 21 2	2572	63 41 29	2596	62 2 28	2621
	Aldebaran	E.	97 19 14	2394	95 35 31	2412	93 52 14	2431	92 9 23	2449
	Sun	E.	133 6 11	2695	131 29 25	2715	129 53 5	2735	128 17 12	2755
6	Antares	W.	95 26 33	2564	97 6 18	2583	98 45 37	2601	100 24 31	2620
	Saturn	W.	68 1 28	2512	69 42 24	2531	71 22 54	2549	73 2 59	2567
	α Aquilæ	W.	54 20 45	3693	55 37 39	3665	56 55 3	3642	58 12 52	3623
	α Arietis	E.	53 55 55	2751	52 20 23	2780	50 45 29	2809	49 11 13	2839
	Aldebaran	E.	83 41 41	2543	82 1 27	2561	80 21 39	2580	78 42 16	2598
	Sun	E.	120 24 20	2855	118 51 4	2875	117 18 13	2895	115 45 47	2914
7	Saturn	W.	81 17 15	2655	82 54 55	2672	84 32 12	2689	86 9 6	2705
	α Aquilæ	W.	64 46 13	3565	66 5 26	3560	67 24 44	3556	68 44 6	3555
	α Arietis	E.	41 30 9	3013	40 0 12	3052	38 31 4	3096	37 2 49	3142
	Aldebaran	E.	70 31 30	2687	68 54 33	2704	67 17 59	2722	65 41 48	2739
	Sun	E.	108 9 49	3010	106 39 49	3029	105 10 12	3047	103 40 57	3065
8	Saturn	W.	94 8 19	2783	95 43 9	2798	97 17 40	2812	98 51 52	2825
	α Aquilæ	W.	75 20 54	3565	76 40 7	3569	77 59 15	3576	79 18 16	3581
	Fomalhaut	W.	40 0 47	3261	41 25 44	3249	42 50 55	3238	44 16 19	3231
	α Arietis	E.	29 56 59	3443	28 35 31	3525	27 15 35	3619	25 57 21	3726
	Aldebaran	E.	57 46 17	2818	56 12 12	2833	54 38 27	2848	53 5 1	2862
	Sun	E.	96 20 3	3149	94 52 53	3165	93 26 2	3181	91 59 30	3195
9	Saturn	W.	106 38 36	2889	108 11 9	2901	109 43 27	2912	111 15 31	2922
	α Aquilæ	W.	85 51 29	3622	87 9 40	3631	88 27 41	3641	89 45 31	3651
	Fomalhaut	W.	51 25 0	3213	52 50 54	3213	54 16 48	3213	55 42 42	3214
	α Pegasi	W.	38 47 41	4139	39 57 5	4074	41 7 32	4016	42 18 56	3964

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Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	Aldebaran	E.	51° 31′ 53″	2876	49° 59′ 4″	2890	48° 26′ 32″	2903	46° 54′ 17″	2916
	Sun	E.	90 33 15	3210	89 7 18	3225	87 41 38	3239	86 16 15	3252
10	α Aquilæ	W.	91 3 10	3663	92 20 37	3674	93 37 52	3686	94 54 54	3698
	Fomalhaut	W.	57 8 35	3215	58 34 26	3216	60 0 16	3218	61 26 4	3220
	α Pegasi	W.	43 31 11	3919	44 44 11	3878	45 57 53	3842	47 12 12	3810
	Aldebaran	E.	39 17 2	2977	37 46 20	2988	36 15 52	2999	34 45 38	3009
	Sun	E.	79 13 2	3312	77 49 4	3323	76 25 19	3332	75 1 45	3343
11	α Aquilæ	W.	101 16 43	3766	102 32 21	3781	103 47 43	3796	105 2 49	3813
	Fomalhaut	W.	68 34 22	3233	69 59 52	3235	71 25 20	3237	72 50 45	3239
	α Pegasi	W.	53 31 11	3689	54 48 10	3671	56 5 28	3655	57 23 3	3640
	Sun	E.	68 6 38	3385	66 44 4	3393	65 21 39	3398	63 59 20	3405
12	Fomalhaut	W.	79 57 13	3249	81 22 24	3252	82 47 32	3253	84 12 38	3254
	α Pegasi	W.	63 54 35	3582	65 13 29	3573	66 32 33	3564	67 51 47	3556
	α Arietis	W.	21 14 17	4323	22 20 48	4176	23 29 37	4054	24 40 23	3950
	Sun	E.	57 9 25	3429	55 47 41	3432	54 26 1	3436	53 4 25	3438
13	Fomalhaut	W.	91 17 50	3259	92 42 50	3260	94 7 48	3261	95 32 45	3261
	α Pegasi	W.	74 29 56	3523	75 49 55	3516	77 10 1	3511	78 30 13	3507
	α Arietis	W.	30 55 46	3620	32 13 59	3577	33 32 58	3540	34 52 38	3506
	Sun	E.	46 17 1	3446	44 55 37	3446	43 34 13	3447	42 12 50	3447
14	α Pegasi	W.	85 12 25	3485	86 33 6	3482	87 53 50	3479	89 14 38	3476
	α Arietis	W.	41 39 10	3381	43 1 48	3363	44 24 47	3345	45 48 7	3328
	Sun	E.	35 25 46	3442	34 4 17	3440	32 42 46	3438	31 21 13	3437
19	Sun	W.	20 25 31	3213	21 51 25	3201	23 17 33	3190	24 43 54	3179
	Mars	E.	59 41 21	3065	58 12 29	3058	56 43 28	3051	55 14 18	3043
	Spica	E.	65 51 9	2883	64 18 28	2875	62 45 37	2869	61 12 38	2862
	Antares	E.	111 45 30	2877	110 12 42	2868	108 39 42	2859	107 6 31	2852
20	Sun	W.	31 58 44	3129	33 26 19	3119	34 54 6	3109	36 22 5	3099
	Mars	E.	47 46 13	3007	46 16 9	3001	44 45 57	2993	43 15 36	2987
	Spica	E.	53 25 34	2828	51 51 43	2822	50 17 44	2817	48 43 38	2811
	Antares	E.	99 17 50	2808	97 43 32	2798	96 9 2	2790	94 34 21	2782
21	Sun	W.	43 45 4	3048	45 14 17	3038	46 43 43	3027	48 13 22	3017
	Mars	E.	35 41 51	2956	34 10 43	2952	32 39 30	2948	31 8 12	2944
	Spica	E.	40 51 12	2784	39 16 23	2780	37 41 29	2777	36 6 31	2775
	Antares	E.	86 37 59	2735	85 2 6	2726	83 26 1	2717	81 49 44	2707
	Saturn	E.	113 4 30	2687	111 27 32	2678	109 50 22	2668	108 12 59	2658
22	Sun	W.	55 44 57	2962	57 15 57	2951	58 47 11	2940	60 18 39	2929
	Spica	E.	28 11 24	2782	26 36 33	2791	25 1 53	2803	23 27 29	2821
	Antares	E.	73 45 9	2660	72 7 36	2651	70 29 50	2640	68 51 50	2631
	Saturn	E.	100 2 48	2609	98 24 5	2599	96 45 9	2589	95 5 59	2578
23	Sun	W.	67 59 36	2871	69 32 32	2859	71 5 44	2847	72 39 11	2835
	Venus	W.	23 2 7	2963	24 33 6	2939	26 4 35	2916	27 36 33	2895
	Antares	E.	60 38 35	2583	58 59 16	2572	57 19 43	2563	55 39 57	2554
	Saturn	E.	86 46 30	2525	85 5 52	2515	83 24 59	2503	81 43 50	2492
	α Aquilæ	E.	106 16 16	3315	104 52 22	3293	103 28 2	3271	102 3 17	3250

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9	Aldebaran	E.	45° 22′ 19″	2929	43° 50′ 37″	2941	42° 19′ 10″	2954	40° 47′ 59″	2965
	Sun	E.	84 51 7	3263	83 26 14	3277	82 1 36	3289	80 37 12	3301
10	α Aquilæ	W.	96 11 43	3710	97 28 19	3724	98 44 41	3737	100 0 49	3750
	Fomalhaut	W.	62 51 49	3223	64 17 31	3225	65 43 11	3227	67 8 48	3230
	α Pegasi	W.	48 27 4	3780	49 42 27	3753	50 58 18	3730	52 14 33	3709
	Aldebaran	E.	33 15 37	3020	31 45 49	3031	30 16 15	3041	28 46 53	3051
	Sun	E.	73 38 23	3352	72 15 12	3361	70 52 11	3370	69 29 20	3378
11	α Aquilæ	W.	106 17 38	3830	107 32 9	3848	108 46 22	3865	110 0 17	3884
	Fomalhaut	W.	74 16 8	3242	75 41 28	3244	77 6 45	3246	78 32 0	3247
	α Pegasi	W.	58 40 54	3626	59 59 0	3613	61 17 20	3602	62 35 52	3592
	Sun	E.	62 37 9	3411	61 15 5	3415	59 53 6	3421	58 31 13	3425
12	Fomalhaut	W.	85 37 43	3255	87 2 47	3257	88 27 49	3258	89 52 50	3259
	α Pegasi	W.	69 11 9	3548	70 30 40	3542	71 50 18	3535	73 10 4	3529
	α Arietis	W.	25 52 52	3863	27 6 49	3788	28 22 4	3724	29 38 26	3669
	Sun	E.	51 42 52	3440	50 21 21	3442	48 59 52	3445	47 38 26	3446
13	Fomalhaut	W.	96 57 42	3261	98 22 39	3262	99 47 35	3262	101 12 31	3263
	α Pegasi	W.	79 50 29	3503	81 10 51	3497	82 31 18	3494	83 51 49	3489
	α Arietis	W.	36 12 55	3476	37 33 46	3449	38 55 7	3424	40 16 56	3402
	Sun	E.	40 51 27	3446	39 30 3	3446	38 8 38	3446	36 47 13	3444
14	α Pegasi	W.	90 35 29	3473	91 56 23	3471	93 17 20	3468	94 38 20	3466
	α Arietis	W.	47 11 46	3313	48 35 43	3299	49 59 56	3284	51 24 26	3271
	Sun	E.	29 59 38	3434	28 38 0	3432	27 16 20	3430	25 54 37	3427
19	Sun	W.	26 10 28	3169	27 37 14	3159	29 4 12	3149	30 31 22	3139
	Mars	E.	53 44 50	3036	52 15 31	3029	50 45 54	3022	49 16 8	3014
	Spica	E.	59 39 31	2855	58 6 15	2848	56 32 50	2842	54 59 16	2835
	Antares	E.	105 33 10	2842	103 59 37	2834	102 25 53	2825	100 51 57	2816
20	Sun	W.	37 50 16	3089	39 18 39	3078	40 47 15	3069	42 16 3	3058
	Mars	E.	41 45 7	2980	40 14 29	2974	38 43 44	2968	37 12 51	2962
	Spica	E.	47 9 24	2805	45 35 2	2798	44 0 32	2793	42 25 55	2788
	Antares	E.	92 59 29	2772	91 24 24	2763	89 49 7	2754	88 13 39	2745
21	Sun	W.	49 43 14	3005	51 13 20	2995	52 43 39	2985	54 14 11	2973
	Mars	E.	29 36 49	2942	28 5 23	2941	26 33 56	2941	25 2 29	2939
	Spica	E.	34 31 30	2773	32 56 27	2773	31 21 24	2774	29 46 22	2777
	Antares	E.	80 13 14	2698	78 36 32	2689	76 59 37	2679	75 22 29	2670
	Saturn	E.	106 35 23	2649	104 57 34	2639	103 19 32	2629	101 41 16	2620
22	Sun	W.	61 50 21	2917	63 22 18	2906	64 54 29	2894	66 26 55	2883
	Spica	E.	21 53 28	2845	20 19 58	2876	18 47 9	2922	17 15 18	2984
	Antares	E.	67 13 37	2622	65 35 12	2612	63 56 33	2601	62 17 40	2593
	Saturn	E.	93 26 34	2568	91 46 55	2558	90 7 2	2547	88 26 54	2535
23	Sun	W.	74 12 54	2822	75 46 53	2811	77 21 7	2798	78 55 37	2786
	Venus	W.	29 8 58	2876	30 41 48	2857	32 15 2	2839	33 48 39	2822
	Antares	E.	53 59 59	2545	52 19 48	2535	50 39 23	2526	48 58 46	2517
	Saturn	E.	80 2 26	2481	78 20 46	2470	76 38 50	2458	74 56 38	2447
	α Aquilæ	E.	100 38 7	3231	99 12 34	3213	97 46 40	3195	96 20 25	3178

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24	Sun	W.	80° 30′ 23″	2773	82° 5′ 26″	2761	83° 40′ 45″	2749	85° 16′ 20″	2736
	Venus	W.	35 22 38	2805	36 56 59	2789	38 31 41	2774	40 6 43	2758
	Antares	E.	47 17 56	2508	45 36 54	2500	43 55 41	2492	42 14 17	2485
	Saturn	E.	73 14 10	2436	71 31 26	2424	69 48 25	2412	68 5 8	2401
	α Aquilæ	E.	94 53 50	3163	93 26 57	3150	91 59 48	3137	90 32 23	3124
25	Sun	W.	93 18 27	2674	94 55 42	2661	96 33 14	2649	98 11 3	2637
	Venus	W.	48 6 58	2684	49 44 0	2670	51 21 20	2656	52 58 59	2642
	Mars	W.	16 41 32	2761	18 16 51	2713	19 53 13	2673	21 30 29	2640
	Spica	W.	14 44 23	2851	16 17 45	2747	17 53 22	2666	19 30 47	2602
	Antares	E.	33 44 53	2458	32 2 41	2456	30 20 26	2457	28 38 12	2460
	Saturn	E.	59 24 34	2343	57 39 37	2331	55 54 23	2320	54 8 53	2309
	α Aquilæ	E.	83 12 3	3080	81 43 29	3075	80 14 49	3072	78 46 5	3069
26	Sun	W.	106 24 12	2577	108 3 38	2566	109 43 20	2555	111 23 17	2543
	Venus	W.	61 11 50	2577	62 51 17	2564	64 31 2	2552	66 11 3	2540
	Mars	W.	29 46 30	2521	31 27 14	2503	33 8 23	2486	34 49 56	2470
	Spica	W.	27 55 23	2410	29 38 44	2384	31 22 42	2361	33 7 13	2340
	Saturn	E.	45 17 14	2253	43 30 5	2243	41 42 41	2232	39 55 1	2222
	α Aquilæ	E.	71 22 15	3081	69 53 42	3088	68 25 18	3098	66 57 6	3111
27	Sun	W.	119 46 46	2492	121 28 10	2484	123 9 46	2475	124 51 35	2467
	Venus	W.	74 35 11	2485	76 16 46	2475	77 58 34	2465	79 40 36	2456
	Mars	W.	43 22 52	2403	45 6 23	2391	46 50 10	2380	48 34 13	2370
	Spica	W.	41 56 36	2258	43 43 38	2245	45 30 59	2232	47 18 39	2220
	Saturn	E.	30 53 1	2174	29 3 55	2166	27 14 36	2158	25 25 5	2150
	α Aquilæ	E.	59 41 5	3219	58 15 18	3252	56 50 10	3288	55 25 45	3331
	Fomalhaut	E.	89 14 56	2372	87 30 41	2364	85 46 14	2356	84 1 36	2348
28	Venus	W.	88 13 49	2417	89 57 0	2410	91 40 20	2405	93 23 48	2399
	Mars	W.	57 17 54	2327	59 3 14	2320	60 48 45	2313	62 34 25	2306
	Spica	W.	56 21 1	2172	58 10 10	2165	59 59 31	2157	61 49 3	2151
	Fomalhaut	E.	75 16 13	2325	73 30 50	2324	71 45 25	2322	69 59 58	2323
	α Pegasi	E.	92 49 19	2540	91 9 1	2533	89 28 34	2529	87 48 1	2524
29	Venus	W.	102 2 45	2382	103 46 45	2381	105 30 47	2380	107 14 51	2379
	Mars	W.	71 24 32	2287	73 10 50	2286	74 57 10	2285	76 43 32	2284
	Spica	W.	70 58 44	2130	72 48 58	2127	74 39 16	2125	76 29 37	2124
	Antares	W.	25 23 35	2242	27 11 0	2223	28 58 53	2208	30 47 8	2196
	Fomalhaut	E.	61 13 18	2341	59 28 18	2349	57 43 30	2359	55 58 56	2369
	α Pegasi	E.	79 24 26	2525	77 43 47	2529	76 3 14	2535	74 22 50	2543
30	Spica	W.	85 41 26	2129	87 31 41	2132	89 21 52	2135	91 11 58	2139
	Mars	W.	85 35 21	2289	87 21 36	2293	89 7 46	2296	90 53 51	2301
	Antares	W.	39 52 2	2164	41 41 24	2163	43 30 48	2162	45 20 13	2163
	Fomalhaut	E.	47 21 6	2460	45 38 57	2487	43 57 26	2517	42 16 37	2552
	α Pegasi	E.	66 4 9	2607	64 25 24	2626	62 47 4	2646	61 9 12	2672
	α Arietis	E.	108 4 15	2945	106 16 54	2945	104 29 34	2947	102 42 16	2948
31	Mars	W.	99 42 13	2334	101 27 23	2342	103 12 21	2351	104 57 6	2362
	Antares	W.	54 26 33	2180	56 15 30	2186	58 4 18	2193	59 52 56	2201
	Saturn	W.	28 19 0	2126	30 9 20	2134	31 59 28	2141	33 49 24	2151
	α Pegasi	E.	53 9 15	2837	51 35 35	2881	50 2 52	2930	48 31 11	2984
	α Arietis	E.	93 46 58	2974	92 0 20	2981	90 13 52	2989	88 27 36	2998

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24	Sun	W.	86° 52′ 12″	2723	88° 28′ 21″	2711	90° 4′ 46″	2698	91° 41′ 28″	2686
	Venus	W.	41 42 6	2743	43 17 49	2728	44 53 52	2713	46 30 15	2698
	Antares	E.	40 32 42	2477	38 50 57	2471	37 9 3	2465	35 27 1	2461
	Saturn	E.	66 21 35	2389	64 37 45	2378	62 53 38	2366	61 9 14	2355
	α Aquilæ	E.	89 4 43	3114	87 36 50	3104	86 8 45	3095	84 40 29	3087
25	Sun	W.	99 49 8	2624	101 27 30	2612	103 6 8	2601	104 45 2	2589
	Venus	W.	54 36 57	2629	56 15 13	2615	57 53 48	2602	59 32 40	2589
	Mars	W.	23 8 30	2611	24 47 10	2585	26 26 26	2562	28 6 13	2540
	Spica	W.	21 9 39	2550	22 49 43	2507	24 30 46	2470	26 12 41	2437
	Antares	E.	26 56 2	2465	25 13 59	2475	23 32 10	2489	21 50 42	2512
	Saturn	E.	52 23 6	2297	50 37 2	2286	48 50 42	2275	47 4 6	2264
	α Aquilæ	E.	77 17 18	3069	75 48 30	3069	74 19 42	3070	72 50 56	3074
26	Sun	W.	113 3 30	2533	114 43 58	2522	116 24 40	2512	118 5 36	2502
	Venus	W.	67 51 21	2528	69 31 55	2517	71 12 45	2505	72 53 51	2495
	Mars	W.	36 31 51	2455	38 14 8	2441	39 56 44	2428	41 39 39	2415
	Spica	W.	34 52 14	2322	36 37 42	2303	38 23 37	2287	40 9 55	2272
	Saturn	E.	38 7 6	2212	36 18 56	2202	34 30 31	2192	32 41 52	2184
	α Aquilæ	E.	65 29 10	3126	64 1 32	3144	62 34 16	3166	61 7 26	3190
27	Sun	W.	126 33 35	2458	128 15 47	2451	129 58 9	2444	131 40 41	2437
	Venus	W.	81 22 51	2448	83 5 18	2439	84 47 57	2431	86 30 48	2424
	Mars	W.	50 18 31	2360	52 3 3	2351	53 47 48	2343	55 32 45	2335
	Spica	W.	49 6 37	2209	50 54 51	2199	52 43 20	2189	54 32 4	2180
	Saturn	E.	23 35 22	2143	21 45 28	2136	19 55 24	2131	18 5 12	2126
	α Aquilæ	E.	54 2 9	3379	52 39 28	3433	51 17 49	3495	49 57 19	3564
	Fomalhaut	E.	82 16 47	2342	80 31 49	2337	78 46 43	2333	77 1 31	2328
28	Venus	W.	95 7 24	2394	96 51 7	2391	98 34 55	2387	100 18 48	2384
	Mars	W.	64 20 13	2302	66 6 9	2298	67 52 11	2294	69 38 19	2291
	Spica	W.	63 38 44	2145	65 28 34	2141	67 18 31	2136	69 8 35	2133
	Fomalhaut	E.	68 14 32	2324	66 29 7	2326	64 43 45	2329	62 58 28	2334
	α Pegasi	E.	86 7 21	2522	84 26 38	2521	82 45 54	2520	81 5 9	2522
29	Venus	W.	108 58 56	2380	110 42 59	2381	112 27 1	2383	114 11 0	2386
	Mars	W.	78 29 55	2283	80 16 19	2284	82 2 42	2285	83 49 3	2287
	Spica	W.	78 20 0	2124	80 10 23	2124	82 0 46	2125	83 51 7	2126
	Antares	W.	32 35 42	2185	34 24 32	2177	36 13 34	2171	38 2 45	2167
	Fomalhaut	E.	54 14 37	2383	52 30 38	2398	50 47 1	2416	49 3 49	2436
	α Pegasi	E.	72 42 36	2551	71 2 34	2562	69 22 47	2575	67 43 18	2590
30	Spica	W.	93 1 57	2145	94 51 48	2150	96 41 31	2157	98 31 4	2165
	Mars	W.	92 39 49	2307	94 25 39	2313	96 11 20	2319	97 56 52	2326
	Antares	W.	47 9 37	2164	48 58 59	2167	50 48 16	2170	52 37 28	2175
	Fomalhaut	E.	40 36 36	2592	38 57 30	2638	37 19 26	2689	35 42 32	2748
	α Pegasi	E.	59 31 54	2698	57 55 11	2727	56 19 7	2760	54 43 47	2797
	α Arietis	E.	100 55 0	2251	99 7 49	2256	97 20 44	2261	95 33 47	2266
31	Mars	W	106 41 36	2372	108 25 51	2383	110 9 50	2395	111 53 32	2406
	Antares	W.	61 41 22	2210	63 29 35	2218	65 17 35	2228	67 5 21	2238
	Saturn	W.	35 39 6	2160	37 28 34	2169	39 17 48	2180	41 6 15	2191
	α Pegasi	E.	47 0 38	3044	45 31 20	3110	44 3 23	3183	42 36 54	3265
	α Arietis	E.	86 41 34	2309	84 55 47	2320	83 10 16	2331	81 25 1	2344

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to* / *subtracted from* *Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	8 44 42.44	9.714	N.18 5 10.7	−37.60	15 48.07	66.67	6 4.69	0.142
Wed.	2	8 48 35.25	9.688	17 49 59.3	38.34	15 48.20	66.58	6 0.95	0.168
Thur.	3	8 52 27.46	9.663	17 34 30.3	39.06	15 48.33	66.49	5 56.62	0.193
Frid.	4	8 56 19.07	9.638	17 18 44.2	39.77	15 48.47	66.41	5 51.69	0.217
Sat.	5	9 0 10.09	9.613	17 2 41.2	40.47	15 48.61	66.32	5 46.17	0.242
Sun.	6	9 4 0.53	9.589	16 46 21.7	41.16	15 48.75	66.24	5 40.07	0.266
Mon.	7	9 7 50.39	9.565	16 29 45.8	41.83	15 48.89	66.15	5 33.39	0.290
Tues.	8	9 11 39.68	9.542	16 12 54.0	42.49	15 49.04	66.07	5 26.14	0.313
Wed.	9	9 15 28.41	9.518	15 55 46.3	43.14	15 49.19	65.98	5 18.33	0.337
Thur.	10	9 19 16.57	9.495	15 38 23.3	43.78	15 49.34	65.90	5 9.96	0.360
Frid.	11	9 23 4.17	9.472	15 20 45.2	44.40	15 49.49	65.82	5 1.03	0.383
Sat.	12	9 26 51.21	9.449	15 2 52.3	45.01	15 49.64	65.74	4 51.55	0.406
Sun.	13	9 30 37.71	9.426	14 44 44.8	45.62	15 49.81	65.66	4 41.53	0.429
Mon.	14	9 34 23.67	9.404	14 26 23.1	46.20	15 49.98	65.58	4 30.96	0.451
Tues.	15	9 38 9.09	9.382	14 7 47.6	46.77	15 50.16	65.50	4 19.85	0.473
Wed.	16	9 41 53.98	9.360	13 48 58.6	47.32	15 50.34	65.42	4 8.22	0.495
Thur.	17	9 45 38.35	9.338	13 29 56.3	47.86	15 50.53	65.34	3 56.07	0.517
Frid.	18	9 49 22.20	9.316	13 10 41.1	48.39	15 50.72	65.26	3 43.40	0.539
Sat.	19	9 53 5.53	9.295	12 51 13.5	48.91	15 50.91	65.18	3 30.22	0.560
Sun.	20	9 56 48.36	9.274	12 31 33.7	49.41	15 51.11	65.10	3 16.53	0.581
Mon.	21	10 0 30.69	9.254	12 11 41.9	49.90	15 51.31	65.04	3 2.34	0.601
Tues.	22	10 4 12.54	9.233	11 51 38.5	50.37	15 51.52	64.98	2 47.67	0.621
Wed.	23	10 7 53.93	9.214	11 31 24.0	50.83	15 51.73	64.91	2 32.53	0.640
Thur.	24	10 11 34.86	9.195	11 10 58.6	51.28	15 51.94	64.85	2 16.96	0.659
Frid.	25	10 15 15.34	9.177	10 50 22.6	51.71	15 52.14	64.79	2 0.94	0.677
Sat.	26	10 18 55.39	9.159	10 29 36.5	52.13	15 52.36	64.73	1 44.48	0.695
Sun.	27	10 22 35.03	9.143	10 8 40.5	52.53	15 52.58	64.67	1 27.61	0.711
Mon.	28	10 26 14.27	9.127	9 47 34.8	52.93	15 52.81	64.62	1 10.35	0.727
Tues.	29	10 29 53.14	9.112	9 26 19.8	53.31	15 53.03	64.57	0 52.72	0.742
Wed.	30	10 33 31.66	9.098	9 4 55.8	53.68	15 53.26	64.52	0 34.74	0.756
Thur.	31	10 37 9.85	9.084	8 43 23.2	54.04	15 53.48	64.47	0 16.42	0.770
Frid.	32	10 40 47.74	9.071	N. 8 21 42.2	−54.38	15 53.71	64.43	0 2.21	0.783

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subtracted from*	Diff. for 1 hour.	Sidereal Time, or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	*added to Mean Time.*		
		h m s	s	° ′ ″	″	m s	s	h m s
Tues.	1	8 44 41.46	9.714	N.18 5 14.5	−37.60	6 4.71	0.142	8 38 36.76
Wed.	2	8 48 34.28	9.688	17 50 3.1	38.34	6 0.97	0.168	8 42 33.31
Thur.	3	8 52 26.50	9.663	17 34 34.2	39.06	5 56.63	0.193	8 46 29.87
Frid.	4	8 56 18.13	9.639	17 18 48.1	39.77	5 51.71	0.217	8 50 26.42
Sat.	5	9 0 9.17	9.614	17 2 45.1	40.47	5 46.19	0.242	8 54 22.98
Sun.	6	9 3 59.62	9.590	16 46 25.6	41.16	5 40.08	0.266	8 58 19.54
Mon.	7	9 7 49.50	9.566	16 29 49.7	41.83	5 33.41	0.290	9 2 16.09
Tues.	8	9 11 38.82	9.543	16 12 57.8	42.49	5 26.17	0.313	9 6 12.65
Wed.	9	9 15 27.57	9.519	15 55 50.1	43.15	5 18.36	0.337	9 10 9.21
Thur.	10	9 19 15.75	9.496	15 38 27.1	43.78	5 9.99	0.360	9 14 5.76
Frid.	11	9 23 3.37	9.473	15 20 48.9	44.40	5 1.06	0.383	9 18 2.31
Sat.	12	9 26 50.45	9.450	15 2 55.9	45.01	4 51.58	0.406	9 21 58.87
Sun.	13	9 30 36.98	9.427	14 44 48.3	45.62	4 41.56	0.429	9 25 55.42
Mon.	14	9 34 22.97	9.405	14 26 26.5	46.20	4 30.99	0.451	9 29 51.98
Tues.	15	9 38 8.42	9.383	14 7 51.0	46.77	4 19.88	0.473	9 33 48.54
Wed.	16	9 41 53.34	9.361	13 49 1.9	47.32	4 8.25	0.495	9 37 45.09
Thur.	17	9 45 37.74	9.339	13 29 59.4	47.87	3 56.10	0.517	9 41 41.64
Frid.	18	9 49 21.63	9.317	13 10 44.1	48.40	3 43.43	0.539	9 45 38.20
Sat.	19	9 53 5.00	9.296	12 51 16.3	48.92	3 30.25	0.560	9 49 34.75
Sun.	20	9 56 47.86	9.275	12 31 36.3	49.42	3 16.56	0.581	9 53 31.30
Mon.	21	10 0 30.23	9.255	12 11 44.4	49.91	3 2.37	0.601	9 57 27.86
Tues.	22	10 4 12.12	9.235	11 51 40.8	50.38	2 47.71	0.621	10 1 24.41
Wed.	23	10 7 53.55	9.216	11 31 26.1	50.84	2 32.58	0.640	10 5 20.97
Thur.	24	10 11 34.52	9.197	11 11 0.5	51.29	2 16.99	0.659	10 9 17.53
Frid.	25	10 15 15.04	9.179	10 50 24.3	51.72	2 0.96	0.677	10 13 14.08
Sat.	26	10 18 55.13	9.161	10 29 38.0	52.14	1 44.50	0.695	10 17 10.63
Sun.	27	10 22 34.81	9.145	10 8 41.8	52.55	1 27.63	0.711	10 21 7.18
Mon.	28	10 26 14.10	9.129	9 47 35.8	52.94	1 10.36	0.727	10 25 3.74
Tues.	29	10 29 53.02	9.114	9 26 20.5	53.32	0 52.73	0.742	10 29 0.29
Wed.	30	10 33 31.58	9.100	9 4 56.3	53.68	0 34.74	0.756	10 32 56.84
Thur.	31	10 37 9.82	9.086	8 43 23.5	54.05	0 16.42	0.770	10 36 53.40
Frid.	32	10 40 47.75	9.073	N. 8 21 42.2	−54.39	0 2.21	0.783	10 40 49.96

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour +9ˢ.8565

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	213	128 44 47.1	44 33.8	143.52	−0.29	0.0063301	−23.9	15 18 52.29
2	214	129 42 12.0	41 58.6	143.56	0.38	.0062719	24.5	15 14 56.39
3	215	130 39 38.0	39 24.5	143.60	0.44	.0062125	25.0	15 11 0.49
4	216	131 37 5.1	36 51.4	143.65	0.47	.0061519	25.6	15 7 4.56
5	217	132 34 33.3	34 19.4	143.70	0.47	.0060899	26.1	15 3 8.65
6	218	133 32 2.7	31 48.7	143.75	0.44	.0060265	26.7	14 59 12.74
7	219	134 29 33.3	29 19.2	143.80	0.38	.0059617	27.3	14 55 16.83
8	220	135 27 5.3	26 51.1	143.86	0.29	.0058954	28.0	14 51 20.92
9	221	136 24 38.7	24 24.3	143.92	0.18	.0058274	28.7	14 47 25.01
10	222	137 22 13.6	21 59.0	143.98	−0.06	.0057575	29.5	14 43 29.10
11	223	138 19 49.9	19 35.2	144.04	+0.07	.0056856	30.3	14 39 33.19
12	224	139 17 27.6	17 12.8	144.10	0.20	.0056117	31.1	14 35 37.29
13	225	140 15 6.8	14 51.8	144.16	0.33	.0055353	32.0	14 31 41.38
14	226	141 12 47.3	12 32.2	144.22	0.46	.0054578	32.9	14 27 45.47
15	227	142 10 29.2	10 14.0	144.27	0.56	.0053775	33.8	14 23 49.56
16	228	143 8 12.5	7 57.2	144.33	0.63	.0052951	34.7	14 19 53.65
17	229	144 5 57.0	5 41.6	144.38	0.67	.0052106	35.6	14 15 57.74
18	230	145 3 42.8	3 27.3	144.44	0.68	.0051239	36.5	14 12 1.83
19	231	146 1 29.9	1 14.2	144.49	0.67	.0050353	37.3	14 8 5.92
20	232	146 59 18.1	59 2.3	144.54	0.63	.0049449	38.0	14 4 10.02
21	233	147 57 7.5	56 51.6	144.59	0.55	.0048527	38.8	14 0 14.11
22	234	148 54 58.1	54 42.1	144.64	0.45	.0047587	39.5	13 56 18.20
23	235	149 52 50.0	52 33.8	144.68	0.35	.0046632	40.1	13 52 22.29
24	236	150 50 43.0	50 26.7	144.73	0.23	.0045663	40.6	13 48 26.38
25	237	151 48 37.2	48 20.8	144.78	+0.10	.0044681	41.1	13 44 30.47
26	238	152 46 32.7	46 16.2	144.84	−0.03	.0043688	41.5	13 40 34.56
27	239	153 44 29.6	44 13.0	144.90	0.16	.0042686	41.8	13 36 38.65
28	240	154 42 27.9	42 11.2	144.96	0.28	.0041677	42.1	13 32 42.75
29	241	155 40 27.7	40 10.8	145.02	0.37	.0040661	42.4	13 28 46.84
30	242	156 38 29.0	38 12.0	145.09	0.43	.0039639	42.7	13 24 50.93
31	243	157 36 31.9	36 14.8	145.16	0.47	.0038610	43.0	13 20 55.02
32	244	158 34 36.5	34 19.3	145.23	−0.47	0.0037575	43.2	13 16 59.12

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour −9s.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 16.7	16 11.2	59 37.9	−1.56	59 17.8	−1.77	13 14.2	2.29	14.8
2	16 5.1	15 58.6	58 55.4	1.94	58 31.3	2.07	14 7.1	2.11	15.8
3	15 51.7	15 44.6	58 6.0	2.14	57 40.2	2.16	14 56.1	1.97	16.8
4	15 37.6	15 30.7	57 14.3	2.14	56 48.9	2.08	15 42.0	1.87	17.8
5	15 24.0	15 17.7	56 24.4	1.99	56 1.3	1.86	16 26.1	1.81	18.8
6	15 11.9	15 6.6	55 39.9	1.71	55 20.4	1.53	17 9.4	1.80	19.8
7	15 1.9	14 57.8	55 3.1	1.34	54 48.2	1.14	17 52.7	1.82	20.8
8	14 54.4	14 51.6	54 35.7	0.94	54 25.6	0.73	18 37.0	1.87	21.8
9	14 49.6	14 48.2	54 18.2	0.52	54 13.2	−0.31	19 22.8	1.95	22.8
10	14 47.6	14 47.5	54 10.7	−0.11	54 10.5	+0.09	20 10.4	2.02	23.8
11	14 48.1	14 49.3	54 12.7	+0.27	54 17.0	0.44	20 59.7	2.08	24.8
12	14 51.0	14 53.2	54 23.3	0.60	54 31.4	0.74	21 50.0	2.11	25.8
13	14 55.8	14 58.8	54 41.0	0.87	54 52.1	0.97	22 40.8	2.11	26.8
14	15 2.2	15 5.8	55 4.4	1.07	55 17.6	1.14	23 31.0	2.07	27.8
15	15 9.6	15 13.6	55 31.6	1.19	54 46.2	1.23	δ		28.8
16	15 17.6	15 21.8	56 1.1	1.26	56 16.3	1.27	0 20.3	2.02	0.2
17	15 25.9	15 30.0	56 31.5	1.27	56 46.7	1.26	1 8.2	1.97	1.2
18	15 34.1	15 38.1	57 1.7	1.24	57 16.4	1.22	1 55.2	1.94	2.2
19	15 42.1	15 45.9	57 30.9	1.19	57 44.9	1.16	2 41.7	1.94	3.2
20	15 49.6	15 53.2	57 58.6	1.12	58 11.8	1.08	3 28.7	1.98	4.2
21	15 56.7	16 0.0	58 24.5	1.03	58 36.6	0.99	4 17.1	2.06	5.2
22	16 3.1	16 6.0	58 48.1	0.93	58 58.9	0.86	5 7.9	2.18	6.2
23	16 8.8	16 11.2	59 8.9	0.79	59 17.8	0.70	6 1.9	2.33	7.2
24	16 13.3	16 15.0	59 25.6	0.59	59 31.9	0.46	6 59.3	2.46	8.2
25	16 16.3	16 17.1	59 36.7	+0.32	59 39.6	+0.16	7 59.6	2.56	9.2
26	16 17.3	16 17.0	59 40.4	−0.02	59 39.0	−0.21	9 1.2	2.56	10.2
27	16 15.9	16 14.2	59 35.2	0.42	59 28.9	0.63	10 1.9	2.48	11.2
28	16 11.8	16 8.7	59 20.1	0.84	59 8.8	1.04	10 59.9	2.34	12.2
29	16 5.0	16 0.7	58 55.1	1.23	58 39.2	1.41	11 54.3	2.18	13.2
30	15 55.8	15 50.5	58 21.4	1.55	58 2.0	1.67	12 45.0	2.04	14.2
31	15 44.9	15 39.1	57 41.4	1.76	57 20.0	1.81	13 32.6	1.93	15.2
32	15 33.2	15 27.2	56 58.2	−1.82	56 36.4	−1.80	14 18.0	1.86	16.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 1.					**THURSDAY 3.**				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	21 22 52.03	2.4671	S. 19 19 40.8	8.989	0	23 13 29.01	2.1510	S. 10 25 25.1	12.634
1	21 25 19.85	2.4603	19 10 38.0	9.105	1	23 15 37.90	2.1452	10 12 45.9	12.671
2	21 27 47.27	2.4536	19 1 28.2	9.220	2	23 17 46.43	2.1395	10 0 4.6	12.706
3	21 30 14.28	2.4468	18 52 11.6	9.332	3	23 19 54.64	2.1340	9 47 21.2	12.740
4	21 32 40.89	2.4400	18 42 48.3	9.443	4	23 22 2.52	2.1286	9 34 35.8	12.772
5	21 35 7.08	2.4331	18 33 18.4	9.552	5	23 24 10.07	2.1232	9 21 48.5	12.804
6	21 37 32.86	2.4262	18 23 42.1	9.659	6	23 26 17.30	2.1178	9 8 59.3	12.834
7	21 39 58.23	2.4194	18 13 59.4	9.764	7	23 28 24.21	2.1124	8 56 8.4	12.863
8	21 42 23.18	2.4124	18 4 10.4	9.868	8	23 30 30.79	2.1071	8 43 15.8	12.891
9	21 44 47.72	2.4054	17 54 15.2	9.970	9	23 32 37.07	2.1020	8 30 21.5	12.917
10	21 47 11.83	2.3985	17 44 14.0	10.070	10	23 34 43.04	2.0969	8 17 25.7	12.942
11	21 49 35.54	2.3916	17 34 6.8	10.168	11	23 36 48.70	2.0919	8 4 28.5	12.965
12	21 51 58.83	2.3846	17 23 53.8	10.265	12	23 38 54.06	2.0869	7 51 29.9	12.987
13	21 54 21.70	2.3777	17 13 35.0	10.360	13	23 40 59.12	2.0820	7 38 30.0	13.008
14	21 56 44.15	2.3709	17 3 10.6	10.453	14	23 43 3.90	2.0772	7 25 28.9	13.027
15	21 59 6.20	2.3640	16 52 40.6	10.545	15	23 45 8.39	2.0724	7 12 26.7	13.046
16	22 1 27.83	2.3570	16 42 5.2	10.634	16	23 47 12.58	2.0676	6 59 23.4	13.063
17	22 3 49.04	2.3501	16 31 24.5	10.722	17	23 49 16.50	2.0630	6 46 19.1	13.080
18	22 6 9.84	2.3432	16 20 38.5	10.809	18	23 51 20.15	2.0584	6 33 13.8	13.095
19	22 8 30.22	2.3363	16 9 47.4	10.893	19	23 53 23.51	2.0539	6 20 7.7	13.108
20	22 10 50.19	2.3295	15 58 51.3	10.976	20	23 55 26.62	2.0495	6 7 0.8	13.121
21	22 13 9.76	2.3227	15 47 50.3	11.057	21	23 57 29.46	2.0451	5 53 53.2	13.132
22	22 15 28.91	2.3158	15 36 44.5	11.137	22	23 59 32.03	2.0409	5 40 45.0	13.142
23	22 17 47.65	2.3089	S. 15 25 33.9	11.215	23	0 1 34.36	2.0366	S. 5 27 36.2	13.152
WEDNESDAY 2.					**FRIDAY 4.**				
0	22 20 5.97	2.3021	S. 15 14 18.7	11.291	0	0 3 36.42	2.0324	S. 5 14 26.8	13.160
1	22 22 23.89	2.2954	15 2 59.0	11.365	1	0 5 38.24	2.0283	5 1 17.0	13.166
2	22 24 41.41	2.2887	14 51 34.9	11.437	2	0 7 39.82	2.0244	4 48 6.9	13.171
3	22 26 58.53	2.2820	14 40 6.5	11.508	3	0 9 41.17	2.0204	4 34 56.5	13.176
4	22 29 15.25	2.2753	14 28 33.9	11.578	4	0 11 42.27	2.0165	4 21 45.8	13.180
5	22 31 31.56	2.2686	14 16 57.2	11.646	5	0 13 43.15	2.0126	4 8 34.9	13.182
6	22 33 47.48	2.2620	14 5 16.4	11.712	6	0 15 43.79	2.0089	3 55 23.9	13.183
7	22 36 3.01	2.2555	13 53 31.7	11.777	7	0 17 44.22	2.0052	3 42 12.9	13.184
8	22 38 18.14	2.2489	13 41 43.2	11.839	8	0 19 44.42	2.0017	3 29 1.8	13.184
9	22 40 32.88	2.2425	13 29 51.0	11.900	9	0 21 44.42	1.9982	3 15 50.8	13.182
10	22 42 47.24	2.2360	13 17 55.2	11.960	10	0 23 44.20	1.9948	3 2 40.0	13.179
11	22 45 1.21	2.2296	13 5 55.8	12.018	11	0 25 43.79	1.9914	2 49 29.3	13.176
12	22 47 14.79	2.2233	12 53 53.0	12.075	12	0 27 43.16	1.9880	2 36 18.9	13.171
13	22 49 27.99	2.2170	12 41 46.8	12.130	13	0 29 42.35	1.9847	2 23 8.8	13.165
14	22 51 40.82	2.2107	12 29 37.4	12.182	14	0 31 41.33	1.9816	2 9 59.1	13.159
15	22 53 53.28	2.2044	12 17 24.9	12.233	15	0 33 40.14	1.9786	1 56 49.7	13.152
16	22 56 5.36	2.1982	12 5 9.4	12.283	16	0 35 38.76	1.9755	1 43 40.8	13.143
17	22 58 17.06	2.1921	11 52 50.9	12.333	17	0 37 37.20	1.9725	1 30 32.5	13.133
18	23 0 28.41	2.1861	11 40 29.4	12.381	18	0 39 35.46	1.9697	1 17 24.9	13.122
19	23 2 39.40	2.1801	11 28 5.1	12.426	19	0 41 33.56	1.9669	1 4 17.9	13.111
20	23 4 50.03	2.1742	11 15 38.2	12.470	20	0 43 31.49	1.9641	0 51 11.6	13.099
21	23 7 0.30	2.1683	11 3 8.7	12.513	21	0 45 29.25	1.9613	0 38 6.0	13.087
22	23 9 10.22	2.1624	10 50 36.6	12.556	22	0 47 26.85	1.9587	0 25 1.2	13.073
23	23 11 19.78	2.1566	10 38 2.0	12.596	23	0 49 24.30	1.9562	S. 0 11 57.3	13.058
24	23 13 29.01	2.1510	S. 10 25 25.1	12.634	24	0 51 21.60	1.9538	N. 0 1 5.7	13.042

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 51 21.60	1.9538	N. 0 1 5.7	13.042
1	0 53 18.76	1.9515	0 14 7.7	13.025
2	0 55 15.78	1.9491	0 27 8.7	13.008
3	0 57 12.65	1.9468	0 40 8.7	12.990
4	0 59 9.40	1.9446	0 53 7.5	12.970
5	1 1 6.02	1.9425	1 6 5.1	12.950
6	1 3 2.50	1.9405	1 19 1.5	12.929
7	1 4 58.87	1.9386	1 31 56.6	12.908
8	1 6 55.13	1.9366	1 44 50.4	12.886
9	1 8 51.27	1.9348	1 57 42.9	12.863
10	1 10 47.31	1.9330	2 10 34.0	12.839
11	1 12 43.23	1.9312	2 23 23.6	12.814
12	1 14 39.05	1.9296	2 36 11.7	12.788
13	1 16 34.78	1.9281	2 48 58.2	12.762
14	1 18 30.42	1.9266	3 1 43.1	12.735
15	1 20 25.97	1.9252	3 14 26.4	12.708
16	1 22 21.44	1.9238	3 27 8.1	12.680
17	1 24 16.83	1.9225	3 39 48.0	12.650
18	1 26 12.14	1.9213	3 52 26.1	12.620
19	1 28 7.38	1.9201	4 5 2.4	12.589
20	1 30 2.55	1.9190	4 17 36.8	12.558
21	1 31 57.66	1.9179	4 30 9.3	12.526
22	1 33 52.70	1.9170	4 42 39.9	12.493
23	1 35 47.69	1.9160	N. 4 55 8.5	12.459

SUNDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 37 42.62	1.9152	N. 5 7 35.0	12.424
1	1 39 37.51	1.9145	5 19 59.4	12.389
2	1 41 32.35	1.9137	5 32 21.7	12.354
3	1 43 27.15	1.9130	5 44 41.9	12.319
4	1 45 21.92	1.9124	5 57 0.0	12.282
5	1 47 16.65	1.9119	6 9 15.8	12.244
6	1 49 11.35	1.9115	6 21 29.3	12.206
7	1 51 6.03	1.9110	6 33 40.5	12.167
8	1 53 0.68	1.9106	6 45 49.3	12.127
9	1 54 55.31	1.9104	6 57 55.7	12.087
10	1 56 49.93	1.9102	7 9 59.7	12.046
11	1 58 44.54	1.9100	7 22 1.2	12.004
12	2 0 39.13	1.9099	7 34 0.1	11.961
13	2 2 33.73	1.9099	7 45 56.5	11.918
14	2 4 28.32	1.9098	7 57 50.3	11.875
15	2 6 22.91	1.9099	8 9 41.5	11.831
16	2 8 17.51	1.9100	8 21 30.0	11.786
17	2 10 12.12	1.9102	8 33 15.8	11.741
18	2 12 6.74	1.9105	8 44 58.9	11.695
19	2 14 1.39	1.9109	8 56 39.2	11.648
20	2 15 56.05	1.9112	9 8 16.6	11.600
21	2 17 50.73	1.9116	9 19 51.2	11.552
22	2 19 45.44	1.9121	9 31 22.9	11.504
23	2 21 40.19	1.9127	9 42 51.7	11.455
24	2 23 34.97	1.9132	N. 9 54 17.5	11.405

MONDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 23 34.97	1.9132	N. 9 54 17.5	11.405
1	2 25 29.78	1.9139	10 5 40.3	11.355
2	2 27 24.63	1.9146	10 17 0.1	11.304
3	2 29 19.53	1.9154	10 28 16.8	11.252
4	2 31 14.47	1.9161	10 39 30.4	11.200
5	2 33 9.46	1.9170	10 50 40.8	11.147
6	2 35 4.51	1.9180	11 1 48.0	11.093
7	2 36 59.62	1.9189	11 12 52.0	11.039
8	2 38 54.78	1.9199	11 23 52.7	10.984
9	2 40 50.00	1.9209	11 34 50.1	10.929
10	2 42 45.28	1.9219	11 45 44.2	10.874
11	2 44 40.63	1.9231	11 56 35.0	10.818
12	2 46 36.05	1.9243	12 7 22.4	10.761
13	2 48 31.55	1.9256	12 18 6.3	10.703
14	2 50 27.12	1.9269	12 28 46.7	10.644
15	2 52 22.78	1.9283	12 39 23.6	10.586
16	2 54 18.52	1.9297	12 49 57.0	10.527
17	2 56 14.34	1.9311	13 0 26.8	10.467
18	2 58 10.25	1.9326	13 10 53.0	10.406
19	3 0 6.26	1.9341	13 21 15.5	10.344
20	3 2 2.35	1.9356	13 31 34.3	10.283
21	3 3 58.54	1.9373	13 41 49.4	10.221
22	3 5 54.84	1.9391	13 52 0.8	10.158
23	3 7 51.23	1.9408	N.14 2 8.4	10.094

TUESDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 9 47.73	1.9425	N.14 12 12.1	10.029
1	3 11 44.33	1.9443	14 22 11.9	9.964
2	3 13 41.04	1.9462	14 32 7.8	9.899
3	3 15 37.87	1.9481	14 41 59.8	9.834
4	3 17 34.81	1.9499	14 51 47.9	9.768
5	3 19 31.86	1.9519	15 1 32.0	9.701
6	3 21 29.03	1.9539	15 11 12.0	9.633
7	3 23 26.33	1.9560	15 20 47.9	9.564
8	3 25 23.75	1.9580	15 30 19.7	9.496
9	3 27 21.29	1.9600	15 39 47.4	9.427
10	3 29 18.96	1.9621	15 49 10.9	9.357
11	3 31 16.75	1.9643	15 58 30.2	9.286
12	3 33 14.68	1.9666	16 7 45.2	9.214
13	3 35 12.74	1.9689	16 16 55.9	9.143
14	3 37 10.94	1.9711	16 26 2.3	9.071
15	3 39 9.27	1.9733	16 35 4.4	8.998
16	3 41 7.74	1.9757	16 44 2.1	8.924
17	3 43 6.35	1.9781	16 52 55.3	8.849
18	3 45 5.11	1.9805	17 1 44.0	8.774
19	3 47 4.02	1.9829	17 10 28.2	8.699
20	3 49 3.07	1.9853	17 19 7.9	8.624
21	3 51 2.26	1.9878	17 27 43.1	8.548
22	3 53 1.60	1.9903	17 36 13.7	8.471
23	3 55 1.10	1.9929	17 44 39.6	8.392
24	3 57 0.75	1.9955	N.17 53 0.8	8.313

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 9.					FRIDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	3 57 0.75	1.9955	N.17 53 0.8	8.313	0	5 35 58.17	2.1277	N.22 50 55.8	3.884
1	3 59 0.55	1.9980	18 1 17.2	8.234	1	5 38 5.91	2.1303	22 54 45.7	3.778
2	4 1 0.51	2.0006	18 9 28.9	8.156	2	5 40 13.81	2.1329	22 58 29.2	3.672
3	4 3 0.62	2.0032	18 17 35.9	8.077	3	5 42 21.86	2.1353	23 2 6.3	3.565
4	4 5 0.89	2.0059	18 25 38.1	7.996	4	5 44 30.05	2.1377	23 5 37.0	3.457
5	4 7 1.33	2.0086	18 33 35.4	7.914	5	5 46 38.39	2.1402	23 9 1.2	3.350
6	4 9 1.92	2.0112	18 41 27.8	7.832	6	5 48 46.88	2.1426	23 12 19.0	3.242
7	4 11 2.67	2.0139	18 49 15.3	7.750	7	5 50 55.50	2.1450	23 15 30.3	3.134
8	4 13 3.58	2.0166	18 56 57.8	7.667	8	5 53 4.27	2.1473	23 18 35.1	3.025
9	4 15 4.66	2.0194	19 4 35.3	7.583	9	5 55 13.18	2.1497	23 21 33.3	2.916
10	4 17 5.90	2.0221	19 12 7.8	7.499	10	5 57 22.23	2.1519	23 24 25.0	2.807
11	4 19 7.31	2.0249	19 19 35.2	7.414	11	5 59 31.41	2.1542	23 27 10.2	2.698
12	4 21 8.89	2.0277	19 26 57.5	7.329	12	6 1 40.73	2.1564	23 29 48.8	2.587
13	4 23 10.63	2.0304	19 34 14.7	7.244	13	6 3 50.18	2.1585	23 32 20.7	2.476
14	4 25 12.54	2.0332	19 41 26.8	7.158	14	6 5 59.75	2.1606	23 34 45.9	2.365
15	4 27 14.62	2.0360	19 48 33.7	7.071	15	6 8 9.45	2.1627	23 37 4.5	2.254
16	4 29 16.87	2.0388	19 55 35.3	6.983	16	6 10 19.27	2.1648	23 39 16.4	2.142
17	4 31 19.28	2.0416	20 2 31.6	6.894	17	6 12 29.22	2.1669	23 41 21.5	2.029
18	4 33 21.86	2.0445	20 9 22.6	6.806	18	6 14 39.29	2.1688	23 43 19.8	1.916
19	4 35 24.62	2.0474	20 16 8.3	6.717	19	6 16 49.47	2.1707	23 45 11.4	1.803
20	4 37 27.55	2.0502	20 22 48.6	6.627	20	6 18 59.77	2.1726	23 46 56.2	1.690
21	4 39 30.64	2.0530	20 29 23.5	6.536	21	6 21 10.18	2.1743	23 48 34.2	1.577
22	4 41 33.91	2.0559	20 35 52.9	6.444	22	6 23 20.68	2.1760	23 50 5.4	1.462
23	4 43 37.35	2.0587	N.20 42 16.8	6.353	23	6 25 31.30	2.1779	N.23 51 29.7	1.347
	THURSDAY 10.					SATURDAY 12.			
0	4 45 40.96	2.0616	N.20 48 35.2	6.261	0	6 27 42.03	2.1797	N.23 52 47.1	1.232
1	4 47 44.74	2.0645	20 54 48.1	6.168	1	6 29 52.86	2.1813	23 53 57.6	1.117
2	4 49 48.69	2.0674	21 0 55.4	6.074	2	6 32 3.79	2.1828	23 55 1.2	1.002
3	4 51 52.82	2.0702	21 6 57.0	5.980	3	6 34 14.80	2.1844	23 55 57.9	0.887
4	4 53 57.11	2.0730	21 12 53.0	5.886	4	6 36 25.92	2.1860	23 56 47.7	0.772
5	4 56 1.58	2.0759	21 18 43.3	5.791	5	6 38 37.13	2.1874	23 57 30.6	0.657
6	4 58 6.22	2.0787	21 24 27.9	5.696	6	6 40 48.41	2.1888	23 58 6.5	0.540
7	5 0 11.02	2.0815	21 30 6.8	5.600	7	6 42 59.78	2.1901	23 58 35.4	0.423
8	5 2 15.99	2.0843	21 35 39.9	5.503	8	6 45 11.22	2.1914	23 58 57.3	0.306
9	5 4 21.14	2.0872	21 41 7.2	5.406	9	6 47 22.75	2.1927	23 59 12.1	0.189
10	5 6 26.46	2.0900	21 46 28.6	5.308	10	6 49 34.36	2.1940	23 59 19.9	+0.072
11	5 8 31.94	2.0928	21 51 44.1	5.209	11	6 51 46.03	2.1951	23 59 20.7	−0.045
12	5 10 37.59	2.0956	21 56 53.7	5.110	12	6 53 57.77	2.1963	23 59 14.5	0.163
13	5 12 43.41	2.0984	22 1 57.3	5.010	13	6 56 9.58	2.1973	23 59 1.2	0.281
14	5 14 49.40	2.1012	22 6 54.9	4.910	14	6 58 21.45	2.1983	23 58 40.8	0.398
15	5 16 55.55	2.1039	22 11 46.5	4.810	15	7 0 33.37	2.1992	23 58 13.4	0.516
16	5 19 1.86	2.1066	22 16 32.1	4.710	16	7 2 45.35	2.2001	23 57 38.9	0.634
17	5 21 8.34	2.1093	22 21 11.7	4.609	17	7 4 57.39	2.2009	23 56 57.3	0.753
18	5 23 14.98	2.1120	22 25 45.2	4.507	18	7 7 9.46	2.2017	23 56 8.6	0.872
19	5 25 21.78	2.1147	22 30 12.5	4.404	19	7 9 21.59	2.2025	23 55 12.7	0.991
20	5 27 28.74	2.1174	22 34 33.6	4.300	20	7 11 33.77	2.2032	23 54 9.7	1.109
21	5 29 35.86	2.1200	22 38 48.5	4.197	21	7 13 45.98	2.2038	23 52 59.6	1.228
22	5 31 43.14	2.1227	22 42 57.2	4.093	22	7 15 58.22	2.2043	23 51 42.4	1.346
23	5 33 50.58	2.1253	22 46 59.6	3.989	23	7 18 10.50	2.2049	23 50 18.1	1.464
24	5 35 58.17	2.1277	N.22 50 55.8	3.884	24	7 20 22.81	2.2054	N.23 48 46.7	1.583

GREENWICH MEAN TIME

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 20 22.81	2.2054	N.23 48 46.7	1.583
1	7 22 35.15	2.2058	23 47 8.1	1.702
2	7 24 47.51	2.2061	23 45 22.4	1.821
3	7 26 59.89	2.2064	23 43 29.6	1.940
4	7 29 12.28	2.2066	23 41 29.6	2.059
5	7 31 24.69	2.2069	23 39 22.5	2.178
6	7 33 37.11	2.2069	23 37 8.3	2.297
7	7 35 49.52	2.2070	23 34 46.9	2.416
8	7 38 1.95	2.2071	23 32 18.4	2.534
9	7 40 14.38	2.2071	23 29 42.8	2.652
10	7 42 26.80	2.2070	23 27 0.1	2.771
11	7 44 39.22	2.2069	23 24 10.3	2.889
12	7 46 51.63	2.2067	23 21 13.4	3.007
13	7 49 4.03	2.2065	23 18 9.4	3.126
14	7 51 16.41	2.2061	23 14 58.3	3.244
15	7 53 28.77	2.2058	23 11 40.1	3.362
16	7 55 41.11	2.2054	23 8 14.8	3.480
17	7 57 53.42	2.2049	23 4 42.5	3.597
18	8 0 5.70	2.2043	23 1 3.1	3.715
19	8 2 17.94	2.2037	22 57 16.7	3.832
20	8 4 30.15	2.2031	22 53 23.2	3.950
21	8 6 42.33	2.2025	22 49 22.7	4.067
22	8 8 54.47	2.2019	22 45 15.2	4.183
23	8 11 6.56	2.2012	N.22 41 0.8	4.299

MONDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 13 18.61	2.2004	N.22 36 39.4	4.415
1	8 15 30.61	2.1996	22 32 11.0	4.531
2	8 17 42.56	2.1987	22 27 35.7	4.646
3	8 19 54.45	2.1977	22 22 53.5	4.761
4	8 22 6.28	2.1967	22 18 4.4	4.876
5	8 24 18.06	2.1958	22 13 8.4	4.991
6	8 26 29.77	2.1947	22 8 5.5	5.106
7	8 28 41.42	2.1936	22 2 55.7	5.220
8	8 30 53.00	2.1924	21 57 39.1	5.333
9	8 33 4.51	2.1912	21 52 15.8	5.445
10	8 35 15.95	2.1900	21 46 45.7	5.558
11	8 37 27.31	2.1887	21 41 8.8	5.671
12	8 39 38.59	2.1873	21 35 25.2	5.783
13	8 41 49.79	2.1860	21 29 34.9	5.894
14	8 44 0.91	2.1846	21 23 37.9	6.005
15	8 46 11.95	2.1833	21 17 34.2	6.115
16	8 48 22.91	2.1819	21 11 24.1	6.225
17	8 50 33.78	2.1803	21 5 7.3	6.335
18	8 52 44.55	2.1787	20 58 43.9	6.445
19	8 54 55.23	2.1772	20 52 13.9	6.554
20	8 57 5.82	2.1757	20 45 37.4	6.662
21	8 59 16.31	2.1741	20 38 54.4	6.770
22	9 1 26.71	2.1725	20 32 5.0	6.877
23	9 3 37.01	2.1708	20 25 9.2	6.983
24	9 5 47.21	2.1692	N.20 18 7.1	7.088

TUESDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 5 47.21	2.1692	N.20 18 7.1	7.088
1	9 7 57.31	2.1674	20 10 58.6	7.194
2	9 10 7.30	2.1657	20 3 43.8	7.299
3	9 12 17.19	2.1640	19 56 22.7	7.404
4	9 14 26.97	2.1622	19 48 55.3	7.506
5	9 16 36.64	2.1604	19 41 21.7	7.612
6	9 18 46.20	2.1585	19 33 41.9	7.714
7	9 20 55.66	2.1566	19 25 56.0	7.816
8	9 23 5.00	2.1547	19 18 4.0	7.917
9	9 25 14.23	2.1528	19 10 5.9	8.018
10	9 27 23.34	2.1510	19 2 1.8	8.118
11	9 29 32.35	2.1491	18 53 51.8	8.217
12	9 31 41.23	2.1472	18 45 35.8	8.316
13	9 33 50.01	2.1453	18 37 13.9	8.414
14	9 35 58.66	2.1433	18 28 46.1	8.512
15	9 38 7.20	2.1414	18 20 12.5	8.608
16	9 40 15.62	2.1395	18 11 33.1	8.704
17	9 42 23.93	2.1375	18 2 48.0	8.799
18	9 44 32.12	2.1354	17 53 57.2	8.894
19	9 46 40.18	2.1333	17 45 0.7	8.989
20	9 48 48.12	2.1314	17 35 58.5	9.082
21	9 50 55.95	2.1294	17 26 50.8	9.174
22	9 53 3.65	2.1274	17 17 37.6	9.266
23	9 55 11.24	2.1254	N.17 8 18.9	9.357

WEDNESDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 57 18.70	2.1234	N.16 58 54.8	9.447
1	9 59 26.05	2.1214	16 49 25.3	9.537
2	10 1 33.27	2.1195	16 39 50.4	9.626
3	10 3 40.39	2.1175	16 30 10.2	9.713
4	10 5 47.37	2.1156	16 20 24.8	9.799
5	10 7 54.26	2.1136	16 10 34.3	9.885
6	10 10 1.00	2.1115	16 0 38.6	9.971
7	10 12 7.64	2.1095	15 50 37.8	10.056
8	10 14 14.15	2.1076	15 40 31.9	10.140
9	10 16 20.55	2.1056	15 30 21.0	10.222
10	10 18 26.83	2.1037	15 20 5.2	10.304
11	10 20 33.00	2.1018	15 9 44.5	10.386
12	10 22 39.05	2.0999	14 59 18.9	10.467
13	10 24 44.99	2.0981	14 48 48.5	10.547
14	10 26 50.82	2.0962	14 38 13.3	10.626
15	10 28 56.53	2.0943	14 27 33.4	10.703
16	10 31 2.13	2.0925	14 16 48.9	10.780
17	10 33 7.63	2.0907	14 5 59.8	10.857
18	10 35 13.01	2.0889	13 55 6.1	10.932
19	10 37 18.29	2.0870	13 44 7.9	11.007
20	10 39 23.46	2.0851	13 33 5.3	11.080
21	10 41 28.51	2.0834	13 21 58.3	11.152
22	10 43 33.47	2.0817	13 10 47.0	11.224
23	10 45 38.33	2.0800	12 59 31.4	11.295
24	10 47 43.08	2.0783	N.12 48 11.6	11.365

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 47 43.08	2.0783	N.12 48 11.6	11.365
1	10 49 47.73	2.0767	12 36 47.6	11.434
2	10 51 52.29	2.0752	12 25 19.5	11.501
3	10 53 56.75	2.0736	12 13 47.4	11.568
4	10 56 1.12	2.0720	12 2 11.3	11.635
5	10 58 5.39	2.0705	11 50 31.2	11.702
6	11 0 9.58	2.0690	11 38 47.1	11.767
7	11 2 13.67	2.0676	11 26 59.2	11.829
8	11 4 17.69	2.0662	11 15 7.6	11.891
9	11 6 21.61	2.0647	11 3 12.3	11.952
10	11 8 25.45	2.0634	10 51 13.3	12.013
11	11 10 29.21	2.0621	10 39 10.7	12.073
12	11 12 32.90	2.0607	10 27 4.5	12.132
13	11 14 36.50	2.0595	10 14 54.8	12.190
14	11 16 40.04	2.0582	10 2 41.7	12.246
15	11 18 43.49	2.0570	9 50 25.3	12.302
16	11 20 46.88	2.0559	9 38 5.5	12.357
17	11 22 50.20	2.0548	9 25 42.4	12.412
18	11 24 53.46	2.0537	9 13 16.1	12.464
19	11 26 56.65	2.0527	9 0 46.7	12.516
20	11 28 59.79	2.0518	8 48 14.2	12.567
21	11 31 2.87	2.0509	8 35 38.7	12.616
22	11 33 5.90	2.0500	8 23 0.3	12.665
23	11 35 8.87	2.0490	N. 8 10 19.0	12.713

FRIDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 37 11.78	2.0482	N. 7 57 34.8	12.760
1	11 39 14.65	2.0475	7 44 47.8	12.806
2	11 41 17.48	2.0468	7 31 58.1	12.851
3	11 43 20.27	2.0462	7 19 5.7	12.895
4	11 45 23.03	2.0456	7 6 10.7	12.937
5	11 47 25.74	2.0450	6 53 13.2	12.978
6	11 49 28.42	2.0444	6 40 13.3	13.019
7	11 51 31.07	2.0439	6 27 10.9	13.060
8	11 53 33.69	2.0435	6 14 6.1	13.099
9	11 55 36.29	2.0432	6 0 59.0	13.137
10	11 57 38.88	2.0429	5 47 49.7	13.173
11	11 59 41.44	2.0426	5 34 38.2	13.209
12	12 1 43.99	2.0424	5 21 24.6	13.243
13	12 3 46.53	2.0423	5 8 9.0	13.277
14	12 5 49.06	2.0421	4 54 51.4	13.310
15	12 7 51.58	2.0421	4 41 31.8	13.342
16	12 9 54.11	2.0422	4 28 10.4	13.371
17	12 11 56.64	2.0422	4 14 47.3	13.399
18	12 13 59.17	2.0424	4 1 22.5	13.428
19	12 16 1.72	2.0425	3 47 56.0	13.456
20	12 18 4.27	2.0427	3 34 27.8	13.483
21	12 20 6.84	2.0430	3 20 58.0	13.508
22	12 22 9.43	2.0434	3 7 26.8	13.532
23	12 24 12.04	2.0438	2 53 54.2	13.554
24	12 26 14.67	2.0442	N. 2 40 20.3	13.576

SATURDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 26 14.67	2.0442	N. 2 40 20.3	13.576
1	12 28 17.34	2.0448	2 26 45.1	13.597
2	12 30 20.04	2.0453	2 13 8.7	13.616
3	12 32 22.77	2.0459	1 59 31.2	13.634
4	12 34 25.55	2.0466	1 45 52.6	13.652
5	12 36 28.37	2.0473	1 32 12.9	13.670
6	12 38 31.23	2.0481	1 18 32.2	13.685
7	12 40 34.14	2.0490	1 4 50.7	13.699
8	12 42 37.11	2.0500	0 51 8.4	13.712
9	12 44 40.14	2.0510	0 37 25.3	13.724
10	12 46 43.23	2.0521	0 23 41.5	13.735
11	12 48 46.39	2.0533	N. 0 9 57.1	13.744
12	12 50 49.62	2.0544	S. 0 3 47.8	13.752
13	12 52 52.92	2.0556	0 17 33.2	13.760
14	12 54 56.30	2.0570	0 31 19.0	13.767
15	12 56 59.76	2.0583	0 45 5.2	13.772
16	12 59 3.30	2.0597	0 58 51.7	13.776
17	13 1 6.93	2.0612	1 12 38.4	13.779
18	13 3 10.65	2.0628	1 26 25.2	13.781
19	13 5 14.47	2.0645	1 40 12.1	13.782
20	13 7 18.39	2.0663	1 53 59.0	13.781
21	13 9 22.42	2.0680	2 7 45.8	13.779
22	13 11 26.54	2.0698	2 21 32.4	13.776
23	13 13 30.79	2.0717	S. 2 35 18.9	13.772

SUNDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 15 35.15	2.0737	S. 2 49 5.1	13.767
1	13 17 39.63	2.0757	3 2 51.0	13.761
2	13 19 44.24	2.0777	3 16 36.4	13.752
3	13 21 48.96	2.0798	3 30 21.3	13.743
4	13 23 53.82	2.0821	3 44 5.6	13.733
5	13 25 58.82	2.0844	3 57 49.3	13.723
6	13 28 3.96	2.0867	4 11 32.4	13.712
7	13 30 9.23	2.0892	4 25 14.7	13.698
8	13 32 14.66	2.0917	4 38 56.2	13.683
9	13 34 20.24	2.0943	4 32 36.7	13.667
10	13 36 25.97	2.0967	5 6 16.2	13.650
11	13 38 31.85	2.0994	5 19 54.7	13.632
12	13 40 37.90	2.1022	5 33 32.1	13.612
13	13 42 44.12	2.1050	5 47 8.2	13.591
14	13 44 50.51	2.1080	6 0 43.0	13.569
15	13 46 57.08	2.1108	6 14 16.5	13.546
16	13 49 3.81	2.1138	6 27 48.5	13.521
17	13 51 10.73	2.1170	6 41 19.0	13.496
18	13 53 17.84	2.1201	6 54 48.0	13.469
19	13 55 25.14	2.1233	7 8 15.3	13.440
20	13 57 32.63	2.1265	7 21 40.8	13.410
21	13 59 40.32	2.1297	7 35 4.5	13.379
22	14 1 48.20	2.1330	7 48 26.3	13.347
23	14 3 56.29	2.1366	8 1 46.2	13.314
24	14 6 4.59	2.1401	S. 8 15 4.0	13.279

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 21.					WEDNESDAY 23.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	14 6 4.59	2.1401	S. 8 15 4.0	13.279	0	15 53 51.63	2.3670	S. 17 46 55.5	10.010
1	14 8 13.10	2.1437	8 28 19.7	13.243	1	15 56 13.81	2.3724	17 56 53.0	9.908
2	14 10 21.83	2.1473	8 41 33.2	13.206	2	15 58 36.32	2.3779	18 6 44.4	9.804
3	14 12 30.78	2.1510	8 54 44.4	13.167	3	16 0 59.16	2.3834	18 16 29.5	9.699
4	14 14 39.95	2.1547	9 7 53.2	13.127	4	16 3 22.33	2.3890	18 26 8.2	9.591
5	14 16 49.35	2.1585	9 20 59.6	13.087	5	16 5 45.83	2.3944	18 35 40.4	9.482
6	14 18 58.98	2.1623	9 34 3.6	13.045	6	16 8 9.66	2.3998	18 45 6.0	9.371
7	14 21 8.83	2.1663	9 47 5.0	13.001	7	16 10 33.81	2.4052	18 54 24.9	9.259
8	14 23 18.93	2.1704	10 0 3.7	12.955	8	16 12 58.29	2.4107	19 3 37.1	9.147
9	14 25 29.27	2.1744	10 12 59.6	12.908	9	16 15 23.10	2.4163	19 12 42.6	9.034
10	14 27 39.86	2.1785	10 25 52.7	12.861	10	16 17 48.24	2.4217	19 21 41.2	8.918
11	14 29 50.69	2.1826	10 38 42.9	12.812	11	16 20 13.70	2.4270	19 30 32.8	8.801
12	14 32 1.77	2.1866	10 51 30.1	12.761	12	16 22 39.48	2.4324	19 39 17.3	8.682
13	14 34 13.11	2.1911	11 4 14.2	12.709	13	16 25 5.59	2.4378	19 47 54.6	8.562
14	14 36 24.70	2.1954	11 16 55.2	12.656	14	16 27 32.02	2.4432	19 56 24.7	8.441
15	14 38 36.56	2.1997	11 29 32.9	12.601	15	16 29 58.77	2.4485	20 4 47.5	8.318
16	14 40 48.67	2.2042	11 42 7.3	12.545	16	16 32 25.84	2.4538	20 13 2.9	8.195
17	14 43 1.06	2.2087	11 54 38.3	12.488	17	16 34 53.23	2.4590	20 21 10.9	8.070
18	14 45 13.72	2.2132	12 7 5.9	12.430	18	16 37 20.93	2.4643	20 29 11.3	7.942
19	14 47 26.65	2.2178	12 19 29.9	12.370	19	16 39 48.94	2.4694	20 37 4.0	7.814
20	14 49 39.86	2.2224	12 31 50.3	12.308	20	16 42 17.26	2.4746	20 44 49.0	7.686
21	14 51 53.34	2.2270	12 44 6.9	12.245	21	16 44 45.89	2.4797	20 52 26.3	7.556
22	14 54 7.10	2.2317	12 56 19.7	12.181	22	16 47 14.83	2.4848	20 59 55.7	7.423
23	14 56 21.15	2.2366	S. 13 8 28.6	12.115	23	16 49 44.07	2.4898	S. 21 7 17.1	7.290
TUESDAY 22.					THURSDAY 24.				
0	14 58 35.49	2.2414	S. 13 20 33.5	12.048	0	16 52 13.60	2.4947	S. 21 14 30.5	7.156
1	15 0 50.12	2.2463	13 32 34.4	11.980	1	16 54 43.43	2.4997	21 21 35.8	7.020
2	15 3 5.04	2.2512	13 44 31.1	11.909	2	16 57 13.56	2.5046	21 28 32.9	6.882
3	15 5 20.26	2.2561	13 56 23.5	11.838	3	16 59 43.98	2.5093	21 35 21.7	6.744
4	15 7 35.77	2.2611	14 8 11.6	11.766	4	17 2 14.68	2.5141	21 42 2.2	6.605
5	15 9 51.59	2.2662	14 19 55.4	11.692	5	17 4 45.67	2.5189	21 48 34.3	6.465
6	15 12 7.71	2.2712	14 31 34.7	11.617	6	17 7 16.94	2.5234	21 54 58.0	6.323
7	15 14 24.13	2.2762	14 43 9.4	11.539	7	17 9 48.48	2.5279	22 1 13.1	6.180
8	15 16 40.86	2.2814	14 54 39.4	11.461	8	17 12 20.29	2.5324	22 7 19.6	6.036
9	15 18 57.90	2.2865	15 6 4.7	11.381	9	17 14 52.37	2.5368	22 13 17.4	5.891
10	15 21 15.24	2.2917	15 17 25.1	11.299	10	17 17 24.71	2.5412	22 19 6.5	5.745
11	15 23 32.90	2.2969	15 28 40.6	11.217	11	17 19 57.31	2.5455	22 24 46.8	5.597
12	15 25 50.87	2.3022	15 39 51.1	11.133	12	17 22 30.17	2.5496	22 30 18.2	5.449
13	15 28 9.16	2.3075	15 50 56.6	11.048	13	17 25 3.26	2.5536	22 35 40.7	5.300
14	15 30 27.77	2.3128	16 1 56.9	10.961	14	17 27 36.60	2.5576	22 40 54.2	5.149
15	15 32 46.70	2.3182	16 12 51.9	10.873	15	17 30 10.18	2.5616	22 45 58.6	4.997
16	15 35 5.95	2.3235	16 23 41.6	10.782	16	17 32 44.00	2.5655	22 50 53.9	4.845
17	15 37 25.52	2.3288	16 34 25.8	10.690	17	17 35 18.04	2.5692	22 55 40.0	4.692
18	15 39 45.41	2.3343	16 45 4.4	10.597	18	17 37 52.30	2.5728	23 0 16.9	4.538
19	15 42 5.64	2.3398	16 55 37.4	10.503	19	17 40 26.77	2.5763	23 4 44.5	4.382
20	15 44 26.18	2.3452	17 6 4.8	10.408	20	17 43 1.46	2.5797	23 9 2.7	4.225
21	15 46 47.05	2.3506	17 16 26.4	10.311	21	17 45 36.34	2.5830	23 13 11.5	4.069
22	15 49 8.25	2.3561	17 26 42.1	10.212	22	17 48 11.42	2.5862	23 17 10.9	3.912
23	15 51 29.78	2.3615	17 36 51.8	10.112	23	17 50 46.69	2.5895	23 21 0.9	3.754
24	15 53 51.63	2.3670	S. 17 46 55.5	10.010	24	17 53 22.15	2.5926	S. 23 24 41.4	3.595

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION

FRIDAY 25.

Hour	Right Ascension	Diff. for 1 m.	Declination	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 53 22.15	[illegible]	S. 27 26 41.4	[illegible]
1	17 55 57.78	[illegible]	27 29 12.4	[illegible]
2	17 58 33.40	[illegible]	27 31 31.5	[illegible]
3	18 1 9.57	[illegible]	27 34 45.0	[illegible]
4	18 3 45.70	[illegible]	27 37 46.8	[illegible]
5	18 6 21.97	[illegible]	27 40 39.8	[illegible]
6	18 8 58.20	[illegible]	27 43 21.1	[illegible]
7	18 11 34.[illegible]	[illegible]	27 45 53.0	[illegible]
8	18 14 11.[illegible]	[illegible]	27 48 16.2	[illegible]
9	18 16 48.44	[illegible]	27 50 29.9	[illegible]
10	18 19 25.[illegible]	[illegible]	27 52 33.7	[illegible]
11	18 22 2.[illegible]	[illegible]	27 54 28.0	[illegible]
12	18 24 39.51	[illegible]	27 56 7.5	[illegible]
13	18 27 16.71	[illegible]	27 57 40.1	[illegible]
14	18 29 54.[illegible]	[illegible]	27 59 3.4	[illegible]
15	18 32 31.40	[illegible]	28 0 16.2	[illegible]
16	18 35 8.[illegible]	[illegible]	28 1 19.0	[illegible]
17	18 37 46.[illegible]	[illegible]	28 2 11.7	[illegible]
18	18 40 23.[illegible]	[illegible]	28 2 54.4	[illegible]
19	18 43 1.48	[illegible]	28 3 27.0	[illegible]
20	18 45 39.10	[illegible]	28 3 49.5	[illegible]
21	18 48 16.75	[illegible]	28 4 1.9	[illegible]
22	18 50 54.43	[illegible]	28 4 4.2	[illegible]
23	18 53 32.11	[illegible]	S. 28 3 56.3	[illegible]

SATURDAY 26.

Hour	Right Ascension	Diff. for 1 m.	Declination	Diff. for 1 m.
0	18 56 [illegible]	[illegible]	S. 28 3 [illegible]	[illegible]
1	18 58 [illegible]	[illegible]	28 3 [illegible]	[illegible]
2	19 1 [illegible]	[illegible]	28 2 [illegible]	[illegible]
3	19 4 [illegible]	[illegible]	28 1 41.7	[illegible]
4	19 6 [illegible]	[illegible]	28 0 [illegible]	[illegible]
5	19 9 [illegible]	[illegible]	27 58 [illegible]	[illegible]
6	19 11 [illegible]	[illegible]	27 56 [illegible]	[illegible]
7	19 14 [illegible]	[illegible]	27 54 [illegible]	[illegible]
8	19 17 [illegible]	[illegible]	27 [illegible]	[illegible]
9	19 19 [illegible]	[illegible]	27 [illegible]	[illegible]
10	19 22 [illegible]	[illegible]	27 [illegible]	[illegible]
11	19 25 [illegible]	[illegible]	27 [illegible]	[illegible]
12	19 27 [illegible]	[illegible]	27 [illegible]	[illegible]
13	19 30 [illegible]	[illegible]	27 44 [illegible]	[illegible]
14	19 32 [illegible]	[illegible]	27 41 [illegible]	[illegible]
15	19 35 [illegible]	[illegible]	27 38 [illegible]	[illegible]
16	19 38 [illegible]	[illegible]	27 35 [illegible]	[illegible]
17	19 40 [illegible]	[illegible]	27 32 [illegible]	[illegible]
18	19 43 [illegible]	[illegible]	27 29 [illegible]	[illegible]
19	19 45 [illegible]	[illegible]	27 [illegible]	[illegible]
20	19 48 [illegible]	[illegible]	27 22 [illegible]	[illegible]
21	19 51 [illegible]	[illegible]	27 18 [illegible]	[illegible]
22	19 53 [illegible]	[illegible]	27 14 [illegible]	[illegible]
23	19 56 [illegible]	[illegible]	27 11 [illegible]	[illegible]
24	19 58 [illegible]	[illegible]	S. 27 [illegible]	[illegible]

SUNDAY 27.

Hour	Right Ascension	Diff. for 1 m.	Declination	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 58 51.59	[illegible]	S. 27 6 29.0	[illegible]
1	20 1 26.70	[illegible]	27 2 1.[illegible]	[illegible]
2	20 4 1.82	[illegible]	26 57 27.5	[illegible]
3	20 6 36.91	[illegible]	26 52 48.7	[illegible]
4	20 9 12.01	[illegible]	26 47 [illegible]	[illegible]
5	20 11 47.12	[illegible]	26 42 [illegible]	[illegible]
6	20 14 22.17	[illegible]	26 37 [illegible]	[illegible]
7	20 16 57.[illegible]	[illegible]	26 32 [illegible]	[illegible]
8	20 19 32.[illegible]	[illegible]	26 26 [illegible]	[illegible]
9	20 22 [illegible]	[illegible]	26 21 7.5	[illegible]
10	20 24 [illegible]	[illegible]	26 15 [illegible]	[illegible]
11	20 27 [illegible]	[illegible]	26 9 [illegible]	[illegible]
12	20 29 [illegible]	[illegible]	26 3 [illegible]	[illegible]
13	20 32 [illegible]	[illegible]	25 57 [illegible]	[illegible]
14	20 34 [illegible]	[illegible]	25 50 41.1	[illegible]
15	20 37 [illegible]	[illegible]	25 44 [illegible]	[illegible]
16	20 39 [illegible]	[illegible]	25 37 [illegible]	[illegible]
17	20 42 [illegible]	[illegible]	25 30 41.5	[illegible]
18	20 44 [illegible]	[illegible]	25 23 44.[illegible]	[illegible]
19	20 47 [illegible]	[illegible]	25 [illegible]	[illegible]
20	20 49 51.[illegible]	[illegible]	25 [illegible]	[illegible]
21	20 52 [illegible]	[illegible]	25 [illegible]	[illegible]
22	20 54 [illegible]	[illegible]	24 54 [illegible]	[illegible]
23	20 57 [illegible]	[illegible]	S. 24 [illegible]	[illegible]

MONDAY 28.

Hour	Right Ascension	Diff. for 1 m.	Declination	Diff. for 1 m.
0	20 59 [illegible]	[illegible]	S. 24 [illegible]	[illegible]
1	21 2 [illegible]	[illegible]	24 [illegible]	[illegible]
2	21 4 [illegible]	[illegible]	24 [illegible]	[illegible]
3	21 7 [illegible]	[illegible]	24 [illegible]	[illegible]
4	21 9 [illegible]	[illegible]	24 [illegible]	[illegible]
5	21 12 [illegible]	[illegible]	[illegible]	[illegible]
6	21 14 [illegible]	[illegible]	[illegible]	[illegible]
7	21 17 [illegible]	[illegible]	[illegible]	[illegible]
8	21 19 [illegible]	[illegible]	[illegible]	[illegible]
9	21 21 [illegible]	[illegible]	[illegible]	[illegible]
10	21 24 [illegible]	[illegible]	[illegible]	[illegible]
11	21 26 [illegible]	[illegible]	[illegible]	[illegible]
12	21 29 [illegible]	[illegible]	[illegible]	[illegible]
13	21 31 [illegible]	[illegible]	[illegible]	[illegible]
14	21 34 [illegible]	[illegible]	[illegible]	[illegible]
15	21 36 [illegible]	[illegible]	[illegible]	[illegible]
16	21 38 [illegible]	[illegible]	[illegible]	[illegible]
17	21 41 [illegible]	[illegible]	[illegible]	[illegible]
18	21 43 [illegible]	[illegible]	[illegible]	[illegible]
19	21 46 [illegible]	[illegible]	[illegible]	[illegible]
20	21 48 [illegible]	[illegible]	[illegible]	[illegible]
21	21 [illegible]	[illegible]	[illegible]	[illegible]
22	21 [illegible]	[illegible]	[illegible]	[illegible]
23	21 [illegible]	[illegible]	[illegible]	[illegible]
24	21 [illegible]	[illegible]	[illegible]	[illegible]

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 57 45.80	2.3439	S. 16 57 27.5	10.513
1	22 0 6.25	2.3380	16 46 53.9	10.607
2	22 2 26.36	2.3321	16 36 14.7	10.698
3	22 4 46.11	2.3262	16 25 30.1	10.787
4	22 7 5.50	2.3202	16 14 40.2	10.875
5	22 9 24.53	2.3143	16 3 45.1	10.962
6	22 11 43.21	2.3083	15 52 44.8	11.047
7	22 14 1.53	2.3024	15 41 39.5	11.130
8	22 16 19.50	2.2966	15 30 29.2	11.212
9	22 18 37.12	2.2907	15 19 14.1	11.292
10	22 20 54.38	2.2847	15 7 54.2	11.371
11	22 23 11.29	2.2789	14 56 29.6	11.448
12	22 25 27.85	2.2731	14 45 0.5	11.523
13	22 27 44.06	2.2673	14 33 26.9	11.597
14	22 29 59.92	2.2615	14 21 48.9	11.668
15	22 32 15.44	2.2557	14 10 6.7	11.738
16	22 34 30.61	2.2500	13 58 20.3	11.807
17	22 36 45.44	2.2443	13 46 29.8	11.875
18	22 38 59.92	2.2386	13 34 35.3	11.941
19	22 41 14.07	2.2330	13 22 36.9	12.006
20	22 43 27.88	2.2273	13 10 34.6	12.069
21	22 45 41.35	2.2217	12 58 28.6	12.130
22	22 47 54.49	2.2162	12 46 19.0	12.189
23	22 50 7.30	2.2106	S. 12 34 5.9	12.247

WEDNESDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 52 19.77	2.2050	S. 12 21 49.3	12.304
1	22 54 31.91	2.1997	12 9 29.4	12.358
2	22 56 43.74	2.1945	11 57 6.3	12.412
3	22 58 55.25	2.1891	11 44 39.9	12.466
4	23 1 6.43	2.1838	11 32 10.4	12.517
5	23 3 17.30	2.1786	11 19 37.9	12.566
6	23 5 27.86	2.1733	11 7 2.5	12.613
7	23 7 38.09	2.1681	10 54 24.3	12.659
8	23 9 48.03	2.1630	10 41 43.4	12.703
9	23 11 57.66	2.1580	10 28 59.9	12.747
10	23 14 6.99	2.1530	10 16 13.8	12.789
11	23 16 16.02	2.1479	10 3 25.2	12.830
12	23 18 24.74	2.1429	9 50 34.2	12.869
13	23 20 33.17	2.1381	9 37 40.9	12.907
14	23 22 41.31	2.1333	9 24 45.4	12.943
15	23 24 49.17	2.1285	9 11 47.8	12.977
16	23 26 56.73	2.1238	8 58 48.2	13.010
17	23 29 4.02	2.1191	8 45 46.6	13.042
18	23 31 11.02	2.1145	8 32 43.2	13.072
19	23 33 17.76	2.1100	8 19 38.0	13.102
20	23 35 24.22	2.1054	8 6 31.0	13.131
21	23 37 30.40	2.1009	7 53 22.3	13.157
22	23 39 36.33	2.0966	7 40 12.1	13.183
23	23 41 41.99	2.0923	7 27 0.4	13.207
24	23 43 47.40	2.0880	S. 7 13 47.3	13.229

THURSDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 43 47.40	2.0880	S. 7 13 47.3	13.229
1	23 45 52.55	2.0837	7 0 32.9	13.251
2	23 47 57.45	2.0795	6 47 17.2	13.271
3	23 50 2.09	2.0753	6 34 0.4	13.289
4	23 52 6.49	2.0713	6 20 42.5	13.307
5	23 54 10.66	2.0674	6 7 23.6	13.323
6	23 56 14.58	2.0634	5 54 3.8	13.338
7	23 58 18.27	2.0596	5 40 43.1	13.352
8	0 0 21.74	2.0558	5 27 21.6	13.364
9	0 2 24.97	2.0520	5 13 59.4	13.375
10	0 4 27.98	2.0484	5 0 36.6	13.386
11	0 6 30.78	2.0448	4 47 13.1	13.396
12	0 8 33.35	2.0412	4 33 49.1	13.403
13	0 10 35.71	2.0376	4 20 24.7	13.409
14	0 12 37.87	2.0342	4 7 0.0	13.414
15	0 14 39.82	2.0308	3 53 35.0	13.418
16	0 16 41.57	2.0275	3 40 9.8	13.422
17	0 18 43.12	2.0243	3 26 44.4	13.424
18	0 20 44.48	2.0211	3 13 18.9	13.426
19	0 22 45.65	2.0179	2 59 53.4	13.426
20	0 24 46.63	2.0149	2 46 27.9	13.424
21	0 26 47.43	2.0118	2 33 2.5	13.422
22	0 28 48.05	2.0089	2 19 37.3	13.418
23	0 30 48.50	2.0060	S. 2 6 12.4	13.413

FRIDAY, SEPTEMBER 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 32 48.77	2.0032	S. 1 52 47.7	13.408

PHASES OF THE MOON.

	d	h	m
☾ Last Quarter, . .	7	16	23.7
● New Moon, . .	15	19	1.7
☽ First Quarter, . .	22	23	35.4
○ Full Moon, . . .	29	18	20.8

	d	h
☾ Apogee, ...	10	6.7
☾ Perigee, ...	25	22.5

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Antares	W.	68° 52′ 52″	2249	70° 40′ 7″	2260	72° 27′ 5″	2272	74° 13′ 45″	2285
	Saturn	W.	42 55 26	2203	44 43 49	2214	46 31 55	2227	48 19 42	2240
	α Pegasi	E.	41 12 2	3358	39 48 57	3460	38 27 48	3575	37 8 46	3704
	α Arietis	E.	79 40 5	2357	77 55 28	2371	76 11 11	2385	74 27 15	2401
	Aldcbaran	E.	110 24 8	2227	108 36 20	2238	106 48 49	2251	105 1 37	2264
2	Antares	W.	83 2 15	2355	84 46 55	2369	86 31 14	2385	88 15 10	2401
	Saturn	W.	57 13 36	2311	58 59 19	2326	60 44 40	2342	62 29 39	2357
	α Aquilæ	W.	45 16 49	4003	46 28 26	3921	47 41 24	3851	48 55 34	3788
	α Arietis	E.	65 53 30	2490	64 12 3	2510	62 31 4	2532	60 50 35	2553
	Aldebaran	E.	96 10 34	2334	94 25 24	2350	92 40 37	2366	90 56 13	2382
3	Saturn	W.	71 8 42	2440	72 51 20	2458	74 33 33	2475	76 15 22	2493
	α Aquilæ	W.	55 20 15	3578	56 39 13	3551	57 58 41	3529	59 18 33	3510
	α Arietis	E.	52 36 3	2676	50 58 51	2704	49 22 17	2734	47 46 22	2764
	Aldebaran	E.	82 19 59	2464	80 37 55	2481	78 56 15	2498	77 14 59	2516
	Jupiter	E.	120 32 40	2526	118 52 3	2543	117 11 50	2561	115 32 1	2578
4	Saturn	W.	84 38 28	2577	86 17 54	2596	87 56 55	2612	89 35 34	2629
	α Aquilæ	W.	66 1 58	3459	67 23 8	3455	68 44 22	3454	70 5 37	3454
	α Arietis	E.	39 57 29	2945	38 26 7	2988	36 55 39	3036	35 26 11	3087
	Aldebaran	E.	68 54 44	2603	67 15 53	2621	65 37 26	2638	63 59 22	2655
	Jupiter	E.	107 18 55	2666	105 41 29	2684	104 4 27	2701	102 27 48	2717
	Sun	E.	132 39 41	2933	131 8 4	2951	129 36 50	2969	128 5 58	2987
5	Saturn	W.	97 43 5	2712	99 19 29	2728	100 55 32	2743	102 31 15	2759
	α Aquilæ	W.	76 51 22	3474	78 12 15	3482	79 32 59	3490	80 53 34	3499
	Fomalhaut	W.	41 45 7	3152	43 12 14	3144	44 39 30	3138	46 6 54	3133
	Aldebaran	E.	55 54 50	2740	54 19 3	2756	52 43 38	2772	51 8 34	2788
	Jupiter	E.	94 30 10	2801	92 55 44	2818	91 21 39	2834	89 47 55	2850
	Sun	E.	120 37 15	3075	119 8 35	3091	117 40 15	3109	116 12 16	3125
6	α Aquilæ	W.	87 33 44	3555	88 53 8	3567	90 12 18	3581	91 31 13	3595
	Fomalhaut	W.	53 24 35	3133	54 52 4	3136	56 19 30	3140	57 46 51	3143
	α Pegasi	W.	40 17 17	3964	41 29 32	3911	42 42 41	3864	43 56 37	3822
	Aldebaran	E.	43 18 24	2866	41 45 21	2880	40 12 37	2895	38 40 12	2909
	Jupiter	E.	82 4 12	2924	80 32 23	2938	79 0 52	2951	77 29 38	2965
	Sun	E.	108 57 16	3204	107 31 11	3219	106 5 24	3233	104 39 54	3247
7	Fomalhaut	W.	65 2 17	3168	66 29 4	3174	67 55 44	3179	69 22 18	3185
	α Pegasi	W.	50 15 29	3678	51 32 39	3658	52 50 11	3641	54 8 1	3625
	Aldebaran	E.	31 2 35	2979	29 31 56	2993	28 1 34	3006	26 31 29	3020
	Jupiter	E.	69 57 25	3024	68 27 42	3034	66 58 12	3045	65 28 55	3055
	Sun	E.	97 36 22	3311	96 12 23	3322	94 48 37	3334	93 25 4	3345
8	Fomalhaut	W.	76 33 32	3911	77 59 28	3915	79 25 19	3920	80 51 5	3925
	α Pegasi	W.	60 40 56	3568	62 0 5	3559	63 19 24	3552	64 38 51	3545
	Jupiter	E.	58 5 19	3097	56 37 6	3104	55 9 1	3110	53 41 4	3116
	Sun	E.	86 30 10	3389	85 7 41	3397	83 45 21	3404	82 23 9	3410
9	Fomalhaut	W.	87 58 40	3943	89 23 58	3946	90 49 13	3948	92 14 25	3951
	α Pegasi	W.	71 17 46	3519	72 37 48	3514	73 57 57	3510	75 18 10	3506
	α Arietis	W.	27 50 20	3720	29 6 46	3664	30 24 11	3616	31 42 28	3574
	Jupiter	E.	46 22 50	3140	44 55 38	3143	43 28 21	3147	42 1 8	3148
	Sun	E.	75 33 50	3436	74 12 14	3440	72 50 43	3443	71 29 15	3446

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Antares	W.	76° 0′ 6″	2298	77° 46′ 8″	2311	79° 31′ 51″	2325	81° 17′ 14″	2340
	Saturn	W.	50 7 10	2253	51 54 18	2268	53 41 5	2282	55 27 31	2296
	α Pegasi	E.	35 52 3	3851	34 37 53	4018	33 26 31	4206	32 18 11	4424
	α Arietis	E.	72 43 42	2417	71 0 32	2434	69 17 46	2452	67 35 25	2470
	Aldebaran	E.	103 14 44	2277	101 28 11	2291	99 41 58	2306	97 56 6	2319
2	Antares	W.	89 58 44	2417	91 41 55	2433	93 24 42	2450	95 7 5	2467
	Saturn	W.	64 14 15	2374	65 58 27	2391	67 42 15	2407	69 25 40	2423
	α Aquilæ	W.	50 10 49	3733	51 27 1	3688	52 44 3	3644	54 1 50	3609
	α Arietis	E.	59 10 36	2576	57 31 8	2600	55 52 13	2624	54 13 51	2649
	Aldebaran	E.	89 12 12	2398	87 28 34	2414	85 45 19	2430	84 2 27	2447
3	Saturn	W.	77 56 47	2508	79 37 49	2526	81 18 26	2544	82 58 38	2560
	α Aquilæ	W.	60 38 46	3495	61 59 16	3482	63 20 0	3472	64 40 55	3465
	α Arietis	E.	46 11 7	2796	44 36 34	2830	43 2 45	2866	41 29 43	2904
	Aldebaran	E.	75 34 8	2533	73 53 40	2551	72 13 37	2569	70 33 59	2585
	Jupiter	E.	113 52 36	2596	112 13 35	2613	110 34 58	2631	108 56 45	2648
4	Saturn	W.	91 13 49	2646	92 51 42	2663	94 29 12	2680	96 6 19	2695
	α Aquilæ	W.	71 26 53	3455	72 48 7	3459	74 9 17	3463	75 30 22	3468
	α Arietis	E.	33 57 45	3149	32 30 26	3204	31 4 21	3272	29 39 37	3349
	Aldebaran	E.	62 21 42	2672	60 44 25	2689	59 7 31	2706	57 30 59	2723
	Jupiter	E.	100 51 31	2736	99 15 37	2752	97 40 6	2769	96 4 57	2785
	Sun	E.	126 35 29	3005	125 5 22	3023	123 35 38	3041	122 6 16	3058
5	Saturn	W.	104 6 37	2774	105 41 39	2789	107 16 21	2804	108 50 44	2818
	α Aquilæ	W.	82 13 59	3506	83 34 14	3519	84 54 17	3531	86 14 7	3543
	Fomalhaut	W.	47 34 24	3130	49 1 57	3130	50 29 30	3130	51 57 3	3131
	Aldebaran	E.	49 33 51	2805	47 59 29	2820	46 25 27	2836	44 51 46	2851
	Jupiter	E.	88 14 32	2865	86 41 28	2880	85 8 44	2895	83 36 19	2909
	Sun	E.	114 44 37	3143	113 17 19	3158	111 50 20	3173	110 23 39	3188
6	α Aquilæ	W.	92 49 53	3610	94 8 17	3624	95 26 25	3639	96 44 17	3655
	Fomalhaut	W.	59 14 8	3148	60 41 19	3153	62 8 24	3158	63 35 24	3163
	α Pegasi	W.	45 11 16	3787	46 26 32	3754	47 42 22	3726	48 58 42	3700
	Aldebaran	E.	37 8 5	2924	35 36 16	2938	34 4 45	2951	32 33 31	2965
	Jupiter	E.	75 58 41	2977	74 28 0	2989	72 57 34	3001	71 27 22	3014
	Sun	E.	103 14 41	3261	101 49 44	3274	100 25 2	3287	99 0 35	3299
7	Fomalhaut	W.	70 48 45	3190	72 15 6	3196	73 41 21	3201	75 7 30	3206
	α Pegasi	W.	55 26 8	3610	56 44 31	3598	58 3 8	3587	59 21 57	3577
	Aldebaran	E.	25 1 41	3034	23 32 11	3050	22 3 0	3066	20 34 9	3082
	Jupiter	E.	63 59 50	3064	62 30 56	3073	61 2 14	3082	59 33 42	3089
	Sun	E.	92 1 44	3354	90 38 35	3363	89 15 36	3372	87 52 48	3381
8	Fomalhaut	W.	82 16 45	3230	83 42 20	3233	85 7 51	3236	86 33 18	3240
	α Pegasi	W.	65 58 25	3539	67 18 6	3533	68 37 54	3528	69 57 47	3524
	Jupiter	E.	52 13 14	3122	50 45 31	3128	49 17 55	3132	47 50 24	3137
	Sun	E.	81 1 4	3416	79 39 6	3423	78 17 15	3428	76 55 30	3432
9	Fomalhaut	W.	93 39 34	3254	95 4 39	3256	96 29 42	3258	97 54 43	3259
	α Pegasi	W.	76 38 27	3503	77 58 48	3499	79 19 13	3496	80 39 42	3493
	α Arietis	W.	33 1 31	3536	34 21 15	3504	35 41 35	3475	37 2 27	3448
	Jupiter	E.	40 33 57	3151	39 6 49	3153	37 39 43	3153	36 12 38	3154
	Sun	E.	70 7 50	3448	68 46 28	3450	67 25 8	3451	66 3 49	3452

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	Fomalhaut	W.	99° 19′ 41″	3261	100° 44′ 38″	3263	102° 9′ 33″	3265	103° 34′ 26″	3265
	α Pegasi	W.	82 0 14	3490	83 20 49	3487	84 41 28	3484	86 2 10	3481
	α Arietis	W.	38 23 49	3424	39 45 38	3403	41 7 51	3383	42 30 27	3365
	Jupiter	E.	34 45 34	3154	33 18 30	3154	31 51 26	3153	30 24 21	3153
	Sun	E.	64 42 31	3452	63 21 13	3452	61 59 55	3452	60 38 37	3451
11	α Pegasi	W.	92 46 25	3469	94 7 24	3467	95 28 25	3464	96 49 29	3463
	α Arietis	W.	49 28 18	3288	50 52 43	3275	52 17 24	3262	53 42 20	3249
	Aldebaran	W.	17 11 15	3146	18 38 29	3130	20 6 2	3116	21 33 52	3103
	Sun	E.	53 51 41	3440	52 30 10	3437	51 8 35	3433	49 46 56	3430
12	α Arietis	W.	60 50 30	3192	62 16 49	3182	63 43 20	3172	65 10 3	3160
	Aldebaran	W.	28 56 29	3053	30 25 30	3043	31 54 55	3034	33 24 25	3026
	Sun	E.	42 57 31	3406	41 35 21	3400	40 13 5	3395	38 50 43	3390
13	α Arietis	W.	72 26 55	3107	73 54 56	3097	75 23 9	3087	76 51 34	3078
	Aldebaran	W.	40 54 39	2981	42 25 15	2972	43 56 3	2963	45 27 2	2954
	Sun	E.	31 57 19	3362	30 34 19	3357	29 11 13	3352	27 48 2	3348
18	Sun	W.	26 59 33	2974	28 30 18	2961	30 1 20	2947	31 32 39	2934
	Mars	E.	42 21 5	2840	40 47 29	2834	39 13 45	2827	37 39 52	2821
	Antares	E.	76 52 0	2621	75 13 34	2613	73 34 57	2606	71 56 10	2598
	Saturn	E.	101 53 3	2583	100 13 45	2574	98 34 15	2566	96 54 34	2559
19	Sun	W.	39 13 3	2879	40 45 49	2868	42 18 49	2859	43 52 1	2849
	Mars	E.	29 48 52	2803	28 14 28	2803	26 40 4	2804	25 5 41	2808
	Antares	E.	63 39 34	2561	61 59 45	2554	60 19 47	2548	58 39 40	2540
	Saturn	E.	88 33 18	2518	86 52 30	2510	85 11 31	2502	83 30 21	2494
	α Aquilæ	E.	108 54 11	3325	107 30 29	3303	106 6 21	3283	104 41 50	3264
20	Sun	W.	51 41 1	2804	53 15 24	2795	54 49 58	2787	56 24 43	2779
	Antares	E.	50 16 55	2512	48 35 58	2507	46 54 55	2502	45 13 45	2499
	Saturn	E.	75 1 50	2457	73 19 36	2450	71 37 12	2442	69 54 39	2436
	α Aquilæ	E.	97 33 59	3185	96 7 32	3173	94 40 51	3163	93 13 57	3153
21	Sun	W.	64 21 10	2738	65 56 59	2731	67 32 58	2723	69 9 7	2716
	Venus	W.	26 39 24	2839	28 13 1	2803	29 47 25	2772	31 22 30	2744
	Antares	E.	36 46 47	2487	35 5 15	2487	33 23 44	2488	31 42 14	2492
	Saturn	E.	61 19 19	2401	59 35 45	2394	57 52 2	2387	56 8 9	2381
	α Aquilæ	E.	85 57 3	3122	84 29 20	3119	83 1 34	3119	81 33 47	3118
22	Sun	W.	77 12 18	2680	78 49 25	2673	80 26 41	2666	82 4 7	2659
	Venus	W.	39 26 5	2639	41 4 7	2622	42 42 32	2607	44 21 18	2593
	Spica	W.	24 39 43	2522	26 20 26	2497	28 1 44	2474	29 43 34	2454
	Saturn	E.	47 26 23	2348	45 41 34	2342	43 56 36	2336	42 11 29	2330
	α Aquilæ	E.	74 15 18	3138	72 47 54	3147	71 20 41	3157	69 53 40	3169
23	Sun	W.	90 13 29	2627	91 51 47	2621	93 30 13	2615	95 8 47	2610
	Venus	W.	52 39 33	2533	54 20 0	2522	56 0 42	2512	57 41 38	2504
	Spica	W.	38 18 47	2383	40 2 48	2371	41 47 4	2361	43 31 35	2351
	Mars	W.	23 33 37	2600	25 12 32	2583	26 51 50	2567	28 31 30	2555
	Saturn	E.	33 23 43	2301	31 37 45	2296	29 51 39	2291	28 5 26	2286
	α Aquilæ	E.	62 43 8	3365	61 18 16	3322	59 53 55	3393	58 30 10	3358
	Fomalhaut	E.	92 42 27	2489	91 0 59	2486	89 19 24	2479	87 37 41	2474

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	Fomalhaut	W.	104° 59′ 18″	3966	106° 24′ 9″	3967	107° 48′ 59″	3969	109° 13′ 47″	3970
	α Pegasi	W.	87 22 55	3479	88 43 43	3476	90 4 34	3473	91 25 28	3471
	α Arietis	W.	43 53 24	3347	45 16 41	3332	46 40 16	3316	48 4 9	3302
	Jupiter	E.	28 57 16	3152	27 30 9	3151	26 3 1	3149	24 35 51	3148
	Sun	E.	59 17 18	3449	57 55 57	3447	56 34 34	3446	55 13 9	3443
11	α Pegasi	W.	98 10 34	3462	99 31 41	3460	100 52 50	3459	102 14 0	3459
	α Arietis	W.	55 7 31	3237	56 32 56	3226	57 58 34	3215	59 24 25	3204
	Aldebaran	W.	23 1 58	3092	24 30 17	3082	25 58 49	3072	27 27 33	3062
	Sun	E.	48 25 13	3425	47 3 25	3421	45 41 32	3416	44 19 34	3412
12	α Arietis	W.	66 37 0	3149	68 4 10	3139	69 31 32	3129	70 59 7	3118
	Aldebaran	W.	34 54 5	3017	36 23 57	3008	37 54 0	2999	39 24 14	2990
	Sun	E.	37 28 15	3385	36 5 41	3379	34 43 0	3373	33 20 13	3367
13	α Arietis	W.	78 20 11	3067	79 49 1	3056	81 18 4	3047	82 47 19	3037
	Aldebaran	W.	46 58 13	2944	48 29 36	2935	50 1 11	2925	51 32 58	2916
	Sun	E.	26 24 46	3344	25 1 25	3342	23 38 2	3340	22 14 37	3340
18	Sun	W.	33 4 15	2922	34 36 6	2911	36 8 11	2900	37 40 30	2889
	Mars	E.	36 5 52	2816	34 31 45	2811	32 57 32	2808	31 23 14	2805
	Antares	E.	70 17 12	2590	68 38 3	2583	66 58 44	2574	65 19 14	2567
	Saturn	E.	95 14 42	2550	93 34 38	2542	91 54 23	2533	90 13 56	2525
19	Sun	W.	45 25 25	2840	46 59 1	2831	48 32 49	2821	50 6 49	2812
	Mars	E.	23 31 23	2812	21 57 11	2821	20 23 10	2831	18 49 22	2843
	Antares	E.	56 59 23	2535	55 18 58	2529	53 38 25	2523	51 57 44	2517
	Saturn	E.	81 49 0	2487	80 7 28	2480	78 25 46	2472	76 43 53	2465
	α Aquilæ	E.	103 16 56	3245	101 51 40	3228	100 26 4	3213	99 0 10	3198
20	Sun	W.	57 59 39	2770	59 34 46	2763	61 10 3	2754	62 45 31	2746
	Antares	E.	43 32 30	2495	41 51 10	2492	40 9 45	2489	38 28 17	2488
	Saturn	E.	68 11 55	2429	66 29 1	2422	64 45 57	2415	63 2 43	2408
	α Aquilæ	E.	91 46 52	3145	90 19 37	3138	88 52 13	3131	87 24 41	3126
21	Sun	W.	70 45 25	2709	72 21 53	2701	73 58 32	2694	75 35 20	2687
	Venus	W.	32 58 12	2719	34 34 27	2695	36 11 13	2675	37 48 26	2656
	Antares	E.	30 0 49	2496	28 19 30	2503	26 38 21	2513	24 57 26	2524
	Saturn	E.	54 24 7	2374	52 39 55	2368	50 55 34	2361	49 11 3	2355
	α Aquilæ	E.	80 5 59	3119	78 38 13	3121	77 10 29	3125	75 42 50	3131
22	Sun	W.	83 41 42	2652	85 19 26	2646	86 57 18	2640	88 35 19	2633
	Venus	W.	46 0 22	2580	47 39 44	2567	49 19 24	2555	50 59 21	2544
	Spica	W.	31 25 52	2437	33 8 34	2422	34 51 38	2407	36 35 3	2394
	Saturn	E.	40 26 13	2324	38 40 48	2318	36 55 15	2312	35 9 33	2307
	α Aquilæ	E.	68 26 54	3183	67 0 25	3200	65 34 16	3219	64 8 29	3241
23	Sun	W.	96 47 29	2604	98 26 18	2599	100 5 15	2593	101 44 19	2588
	Venus	W.	59 22 46	2494	61 4 7	2486	62 45 40	2478	64 27 24	2470
	Spica	W.	45 16 20	2342	47 1 18	2333	48 46 29	2325	50 31 52	2318
	Mars	W.	30 11 27	2543	31 51 40	2533	33 32 8	2522	35 12 50	2513
	Saturn	E.	26 19 6	2281	24 32 38	2277	22 46 4	2272	20 59 23	2268
	α Aquilæ	E.	57 7 6	3397	55 44 46	3439	54 23 14	3488	53 2 36	3543
	Fomalhaut	E.	85 55 51	2469	84 13 54	2465	82 31 52	2462	80 49 45	2458

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
24	SUN	W.	103° 23′ 30″	2584	105° 2′ 47″	2579	106° 42′ 11″	2574	108° 21′ 41″	2571
	Venus	W.	66 9 19	2462	67 51 25	2455	69 33 41	2449	71 16 6	2443
	Spica	W.	52 17 25	2311	54 3 8	2304	55 49 1	2298	57 35 3	2292
	Mars	W.	36 53 45	2505	38 34 51	2497	40 16 8	2490	41 57 35	2484
	Fomalhaut	E.	79 7 33	2456	77 25 18	2455	75 43 1	2453	74 0 42	2453
	α Pegasi	E.	96 36 14	2678	94 59 4	2670	93 21 44	2664	91 44 16	2660
25	SUN	W.	116 40 27	2554	118 20 25	2553	120 0 26	2550	121 40 30	2548
	Venus	W.	79 50 16	2417	81 33 27	2412	83 16 44	2409	85 0 6	2405
	Spica	W.	66 27 14	2268	68 14 0	2265	70 0 51	2262	71 47 47	2258
	Mars	W.	50 26 58	2457	52 9 12	2453	53 51 31	2450	55 33 55	2445
	Antares	W.	20 59 54	2434	22 42 40	2404	24 26 9	2379	26 10 14	2358
	Fomalhaut	E.	65 29 13	2460	63 47 4	2465	62 5 2	2471	60 23 8	2477
	α Pegasi	E.	83 35 43	2649	81 57 54	2649	80 20 6	2652	78 42 21	2655
26	SUN	W.	130 1 15	2545	131 41 25	2546	133 21 34	2548	135 1 40	2551
	Venus	W.	93 37 56	2396	95 21 38	2395	97 5 20	2395	98 49 2	2395
	Spica	W.	80 43 25	2249	82 30 39	2247	84 17 55	2246	86 5 11	2248
	Mars	W.	64 6 58	2436	65 49 42	2434	67 32 28	2434	69 15 14	2433
	Antares	W.	34 56 37	2298	36 42 40	2291	38 28 53	2285	40 15 15	2281
	Fomalhaut	E.	51 56 31	2531	50 16 1	2548	48 35 55	2566	46 56 14	2588
	α Pegasi	E.	70 35 9	2688	68 58 13	2699	67 21 32	2713	65 45 9	2726
27	Venus	W.	107 27 13	2405	109 10 41	2409	110 54 3	2414	112 37 18	2418
	Mars	W.	77 48 55	2440	79 31 33	2442	81 14 8	2445	82 56 38	2449
	Antares	W.	49 8 16	2270	50 54 59	2271	52 41 41	2272	54 28 22	2274
	Saturn	W.	23 58 15	2224	25 46 7	2227	27 33 55	2229	29 21 40	2232
	α Pegasi	E.	57 48 49	2830	56 15 0	2859	54 41 48	2891	53 9 17	2926
	α Arietis	E.	98 59 27	2358	97 14 52	2360	95 30 20	2363	93 45 52	2365
28	Mars	W.	91 27 43	2473	93 9 34	2480	94 51 16	2486	96 32 49	2493
	Antares	W.	63 20 53	2290	65 7 7	2295	66 53 14	2300	68 39 13	2306
	Saturn	W.	38 19 1	2254	40 6 8	2260	41 53 6	2266	43 39 55	2273
	α Pegasi	E.	45 39 30	3169	44 12 44	3236	42 47 17	3310	41 23 17	3393
	α Arietis	E.	85 4 47	2389	83 20 57	2396	81 37 16	2403	79 53 46	2412
29	Mars	W.	104 57 48	2536	106 38 11	2545	108 18 21	2556	109 58 16	2567
	Antares	W.	77 26 44	2344	79 11 39	2353	80 56 22	2362	82 40 52	2371
	Saturn	W.	52 31 21	2313	54 17 1	2322	56 2 28	2331	57 47 42	2342
	α Aquilæ	W.	41 38 51	4401	42 44 11	4273	43 51 29	4156	45 0 35	4056
	α Arietis	E.	71 19 33	2464	69 37 29	2476	67 55 42	2489	66 14 13	2504
30	Antares	W.	91 19 40	2422	93 2 37	2436	94 45 17	2450	96 27 40	2463
	Saturn	W.	66 30 3	2397	68 13 42	2408	69 57 5	2421	71 40 10	2433
	α Aquilæ	W.	51 7 28	3704	52 24 11	3656	53 41 45	3614	55 0 4	3577
	α Arietis	E.	57 52 8	2587	56 12 55	2607	54 34 9	2627	52 55 51	2649
	Aldebaran	E.	87 51 53	2409	86 8 31	2422	84 25 27	2433	82 42 40	2446
31	Saturn	W.	80 10 59	2500	81 52 12	2515	83 33 5	2528	85 13 39	2543
	α Aquilæ	W.	61 40 7	3456	63 1 20	3441	64 22 50	3431	65 44 32	3422
	α Arietis	E.	44 52 20	2781	43 17 27	2812	41 43 15	2846	40 9 47	2883
	Aldebaran	E.	74 13 19	2514	72 32 25	2527	70 51 50	2541	69 11 34	2556
	Jupiter	E.	118 4 10	2566	116 24 29	2581	114 45 8	2595	113 6 6	2610

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
24	Sun	W.	110° 1′ 16″	2567	111° 40′ 56″	2563	113° 20′ 42″	2560	115° 0′ 32″	2556
	Venus	W.	72 58 40	2437	74 41 22	2431	76 24 13	2426	78 7 11	2421
	Spica	W.	59 21 14	2287	61 7 33	2281	62 54 0	2277	64 40 34	2272
	Mars	W.	43 39 11	2477	45 20 56	2472	47 2 49	2466	48 44 50	2461
	Fomalhaut	E.	72 18 22	2452	70 36 1	2453	68 53 42	2455	67 11 26	2458
	α Pegasi	E.	90 6 42	2655	88 29 2	2653	86 51 19	2650	85 13 32	2649
25	Sun	W.	123 20 37	2547	125 0 45	2546	126 40 54	2545	128 21 5	2545
	Venus	W.	86 43 33	2402	88 27 5	2400	90 10 40	2398	91 54 17	2397
	Spica	W.	73 34 48	2256	75 21 53	2253	77 9 2	2251	78 56 13	2251
	Mars	W.	57 16 25	2443	58 58 59	2441	60 41 36	2438	62 24 16	2437
	Antares	W.	27 54 49	2341	29 39 49	2328	31 25 8	2315	33 10 45	2305
	Fomalhaut	E.	58 41 22	2485	56 59 48	2494	55 18 26	2505	53 37 20	2517
	α Pegasi	E.	77 4 40	2658	75 27 4	2665	73 49 37	2670	72 12 17	2679
26	Sun	W.	136 41 43	2553	138 21 43	2556	140 1 38	2561	141 41 27	2564
	Venus	W.	100 32 44	2395	102 16 26	2397	104 0 5	2399	105 43 41	2402
	Spica	W.	87 52 27	2249	89 39 42	2249	91 26 56	2249	93 14 7	2253
	Mars	W.	70 58 1	2434	72 40 47	2435	74 23 32	2436	76 6 15	2438
	Antares	W.	42 1 43	2277	43 48 17	2274	45 34 54	2272	47 21 34	2271
	Fomalhaut	E.	45 17 3	2612	43 38 25	2640	42 0 25	2672	40 23 8	2709
	α Pegasi	E.	64 9 4	2743	62 33 21	2761	60 58 2	2782	59 23 10	2805
27	Venus	W.	114 20 27	2424	116 3 28	2431	117 46 19	2438	119 28 59	2445
	Mars	W.	84 39 3	2453	86 21 23	2457	88 3 37	2462	89 45 44	2467
	Antares	W.	56 15 0	2276	58 1 35	2278	59 48 7	2282	61 34 33	2286
	Saturn	W.	31 9 20	2235	32 56 55	2239	34 44 24	2244	36 31 46	2249
	α Pegasi	E.	51 37 31	2965	50 6 34	3008	48 36 31	3056	47 7 28	3110
	α Arietis	E.	92 1 27	2368	90 17 7	2373	88 32 53	2378	86 48 46	2383
28	Mars	W.	98 14 12	2501	99 55 24	2510	101 36 24	2518	103 17 12	2527
	Antares	W.	70 25 4	2313	72 10 45	2320	73 56 16	2327	75 41 36	2335
	Saturn	W.	45 26 34	2280	47 13 3	2287	48 59 21	2296	50 45 27	2304
	α Pegasi	E.	40 0 53	3488	38 40 15	3593	37 21 33	3712	36 4 59	3842
	α Arietis	E.	78 10 28	2421	76 27 23	2430	74 44 31	2441	73 1 54	2452
29	Mars	W.	111 37 56	2578	113 17 21	2590	114 56 30	2602	116 35 22	2614
	Antares	W.	84 25 8	2382	86 9 9	2392	87 52 55	2403	89 36 26	2415
	Saturn	W.	59 32 41	2352	61 17 25	2362	63 1 54	2373	64 46 7	2385
	α Aquilæ	W.	46 11 19	3967	47 23 31	3890	48 37 1	3820	49 51 42	3758
	α Arietis	E.	64 33 4	2519	62 52 16	2534	61 11 50	2551	59 31 47	2568
30	Antares	W.	98 9 45	2477	99 51 31	2490	101 32 58	2503	103 14 7	2516
	Saturn	W.	73 22 57	2447	75 5 25	2460	76 47 35	2472	78 29 27	2487
	α Aquilæ	W.	56 19 3	3545	57 38 37	3517	58 58 42	3494	60 19 13	3473
	α Arietis	E.	51 18 3	2672	49 40 46	2696	48 4 1	2723	46 27 52	2751
	Aldebaran	E.	81 0 11	2459	79 18 0	2472	77 36 7	2485	75 54 33	2499
31	Saturn	W.	86 53 53	2558	88 33 46	2572	90 13 20	2586	91 52 34	2601
	α Aquilæ	W.	67 6 24	3415	68 28 24	3410	69 50 29	3407	71 12 38	3405
	α Arietis	E.	38 37 7	2923	37 5 17	2966	35 34 22	3014	34 4 26	3068
	Aldebaran	E.	67 31 38	2571	65 52 3	2585	64 12 48	2601	62 33 54	2615
	Jupiter	E.	111 27 24	2624	109 49 2	2638	108 10 59	2653	106 33 16	2668

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Frid.	1	10 40 47.74	9.071	N.8 21 42.2	–54.38	15 53.71	64.43	0 2.21	0.783
Sat.	2	10 44 25.32	9.060	7 59 53.2	54.71	15 53.94	64.38	0 21.12	0.794
Sun.	3	10 48 2.62	9.049	7 37 56.5	55.03	15 54.17	64.34	0 40.31	0.805
Mon.	4	10 51 39.66	9.039	7 15 52.2	55.33	15 54.40	64.30	0 59.77	0.815
Tues.	5	10 55 16.48	9.030	6 53 40.7	55.62	15 54.64	64.27	1 19.45	0.824
Wed.	6	10 58 53.10	9.022	6 31 22.4	55.90	15 54.87	64.23	1 39.34	0.833
Thur.	7	11 2 29.51	9.013	6 8 57.5	56.17	15 55.11	64.20	1 59.42	0.841
Frid.	8	11 6 5.74	9.006	5 46 26.5	56.42	15 55.35	64.16	2 19.69	0.848
Sat.	9	11 9 41.81	9.000	5 23 49.5	56.66	15 55.59	64.14	2 40.13	0.854
Sun.	10	11 13 17.74	8.995	5 1 6.9	56.89	15 55.84	64.12	3 0.69	0.859
Mon.	11	11 16 53.55	8.990	4 38 19.2	57.09	15 56.09	64.10	3 21.37	0.864
Tues.	12	11 20 29.25	8.986	4 15 26.5	57.28	15 56.34	64.08	3 42.16	0.868
Wed.	13	11 24 4.86	8.982	3 52 29.2	57.46	15 56.59	64.07	4 3.05	0.872
Thur.	14	11 27 40.38	8.978	3 29 27.7	57.63	15 56.84	64.06	4 24.02	0.876
Frid.	15	11 31 15.85	8.976	3 6 22.4	57.79	15 57.10	64.05	4 45.05	0.878
Sat.	16	11 34 51.27	8.975	2 43 13.5	57.93	15 57.36	64.05	5 6.12	0.879
Sun.	17	11 38 26.66	8.974	2 20 1.6	58.05	15 57.63	64.05	5 27.23	0.880
Mon.	18	11 42 2.04	8.974	1 56 46.8	58.16	15 57.90	64.05	5 48.34	0.880
Tues.	19	11 45 37.43	8.975	1 33 29.4	58.25	15 58.17	64.06	6 9.44	0.879
Wed.	20	11 49 12.84	8.977	1 10 10.2	58.33	15 58.44	64.07	6 30.52	0.877
Thur.	21	11 52 48.30	8.979	0 46 49.3	58.40	15 58.71	64.08	6 51.56	0.875
Frid.	22	11 56 23.82	8.982	0 23 27.0	58.45	15 58.98	64.09	7 12.54	0.872
Sat.	23	11 59 59.43	8.986	N.0 0 3.7	58.49	15 59.26	64.11	7 33.44	0.868
Sun.	24	12 3 35.14	8.991	S. 0 23 20.3	58.51	15 59.54	64.13	7 54.23	0.863
Mon.	25	12 7 10.97	8.997	0 46 44.6	58.51	15 59.82	64.15	8 14.88	0.857
Tues.	26	12 10 46.96	9.003	1 10 9.0	58.51	16 0.09	64.17	8 35.39	0.851
Wed.	27	12 14 23.12	9.011	1 33 33.1	58.49	16 0.37	64.20	8 55.72	0.843
Thur.	28	12 17 59.48	9.020	1 56 56.5	58.46	16 0.64	64.23	9 15.87	0.834
Frid.	29	12 21 36.06	9.030	2 20 18.8	58.41	16 0.92	64.27	9 35.79	0.824
Sat.	30	12 25 12.89	9.040	2 43 39.8	58.35	16 1.19	64.31	9 55.46	0.814
Sun.	31	12 28 49.99	9.051	S. 3 6 59.1	–58.27	16 1.47	64.35	10 14.86	0.803

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time, or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Frid.	1	10 40 47.75	9.073	N. 8 21 42.2	–54.39	0 2.21	0.783	10 40 49.96
Sat.	2	10 44 25,38	9.062	7 59 52.9	54.72	0 21.13	0.794	10 44 46.51
Sun.	3	10 48 2,73	9.051	7 37 55.8	55.04	0 40.33	0.805	10 48 43.06
Mon.	4	10 51 39.82	9.041	7 15 51.2	55.34	0 59.79	0.815	10 52 39.61
Tues.	5	10 55 16.69	9.032	6 53 39.4	55.63	1 19.47	0.824	10 56 36.16
Wed.	6	10 58 53.36	9.024	6 31 20.8	55.91	1 39.36	0.833	11 0 32.72
Thur.	7	11 2 29.82	9.015	6 8 55.6	56.18	1 59.45	0.841	11 4 29.27
Frid.	8	11 6 6.10	9.008	5 46 24.2	56.43	2 19.72	0.848	11 8 25.82
Sat.	9	11 9 42.22	9.002	5 23 46.9	56.67	2 40.16	0.854	11 12 22.38
Sun.	10	11 13 18.20	8.997	5 1 4.0	56.90	3 0.73	0.859	11 16 18.93
Mon.	11	11 16 54.06	8.992	4 38 15.9	57.11	3 21.42	0.864	11 20 15.48
Tues.	12	11 20 29.81	8.988	4 15 22.9	57.30	3 42.23	0.868	11 24 12.04
Wed.	13	11 24 5.47	8.984	3 52 25.3	57.48	4 3.12	0.872	11 28 8.59
Thur.	14	11 27 41.05	8.980	3 29 23.4	57.65	4 24.09	0.876	11 32 5.14
Frid.	15	11 31 16.57	8.978	3 6 17.7	57.81	4 45.12	0.878	11 36 1.69
Sat.	16	11 34 52.05	8.977	2 43 8.5	57.95	5 6.20	0.879	11 39 58.25
Sun.	17	11 38 27.49	8.976	2 19 56.2	58.07	5 27.31	0.880	11 43 54,80
Mon.	18	11 42 2,92	8.976	1 56 41.0	58.18	5 48.43	0.880	11 47 51.35
Tues.	19	11 45 38.37	8.977	1 33 23.4	58.27	6 9.54	0.879	11 51 47.91
Wed.	20	11 49 13.83	8.979	1 10 3.8	58.35	6 30.63	0.877	11 55 44.46
Thur.	21	11 52 49.34	8.981	0 46 42.5	58.42	6 51.67	0.875	11 59 41.01
Frid.	22	11 56 24.91	8.984	N. 0 23 19.9	58.47	7 12.65	0.872	12 3 37.56
Sat.	23	12 0 0.57	8.988	S. 0 0 3.8	58.51	7 33.55	0.868	12 7 34.12
Sun.	24	12 3 36.33	8.993	0 23 28.1	58.53	7 54.34	0.863	12 11 30.67
Mon.	25	12 7 12.22	8.999	0 46 52.7	58.53	8 15.00	0.851	12 15 27.22
Tues.	26	12 10 48.27	9.005	1 10 17.5	58.53	8 35.51	0.851	12 19 23.78
Wed.	27	12 14 24.48	9.013	1 33 41.9	58.50	8 55.85	0.843	12 23 20.33
Thur.	28	12 18 0,88	9.022	1 57 5.6	58.47	9 16.00	0.834	12 27 16.88
Frid.	29	12 21 37.52	9.032	2 20 28.2	58.42	9 35.92	0.824	12 31 13.44
Sat.	30	12 25 14.40	9.042	2 43 49.5	58.36	9 55.59	0.814	12 35 9.99
Sun.	31	12 28 51.55	9.053	S. 3 7 9.2	–58.28	10 14.99	0.803	12 39 6.54

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour $+9^{s}.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	′	″			h m s
1	244	158 34 36.5	34 19.3	145.23	−0.47	0.0037575	−43.2	13 16 59.12
2	245	159 32 42.9	32 25.6	145.30	0.44	.0036534	43.4	13 13 3.21
3	246	160 30 51.2	30 33.8	145.39	0.38	.0035487	43.7	13 9 7.30
4	247	161 29 1.4	28 43.9	145.47	0.30	.0034433	44.0	13 5 11.39
5	248	162 27 13.5	26 55.9	145.55	0.20	.0033373	44.3	13 1 15.49
6	249	163 25 27.6	25 9.9	145.63	−0.08	.0032304	44.7	12 57 19.58
7	250	164 23 43.7	23 25.9	145.71	+0.05	.0031225	45.1	12 53 23.67
8	251	165 22 1.9	21 44.0	145.80	0.19	.0030136	45.6	12 49 27.76
9	252	166 20 22.3	20 4.3	145.89	0.32	.0029036	46.1	12 45 31.86
10	253	167 18 44.8	18 26.7	145.98	0.45	.0027924	46.6	12 41 35.95
11	254	168 17 9.3	16 51.1	146.06	0.56	.0026800	47.1	12 37 40.04
12	255	169 15 35.8	15 17.5	146.15	0.64	.0025663	47.6	12 33 44.13
13	256	170 14 4.3	13 45.9	146.23	0.69	.0024512	48.2	12 29 48.23
14	257	171 12 34.8	12 16.3	146.31	0.71	.0023347	48.8	12 25 52.33
15	258	172 11 7.1	10 48.5	146.39	0.71	.0022169	49.3	12 21 56.42
16	259	173 9 41.3	9 22.6	146.47	0.67	.0020978	49.8	12 18 0.51
17	260	174 8 17.3	7 58.5	146.54	0.60	.0019774	50.4	12 14 4.61
18	261	175 6 55.1	6 36.2	146.61	0.51	.0018559	50.8	12 10 8.70
19	262	176 5 34.6	5 15.6	146.67	0.41	.0017334	51.2	12 6 12.79
20	263	177 4 15.8	3 56.7	146.74	0.29	.0016100	51.5	12 2 16.88
21	264	178 2 58.7	2 39.5	146.81	0.17	.0014858	51.8	11 58 20.98
22	265	179 1 43.2	1 23.9	146.89	+0.04	.0013611	52.2	11 54 25.07
23	266	180 0 29.4	0 10.0	146.96	−0.10	.0012360	52.2	11 50 29.16
24	267	180 59 17.4	58 57.9	147.04	0.20	.0011107	52.3	11 46 33.25
25	268	181 58 7.1	57 47.5	147.11	0.29	.0009853	52.3	11 42 37.35
26	269	182 56 58.6	56 39.0	147.19	0.36	.0008600	52.2	11 38 41.44
27	270	183 55 52.0	55 32.3	147.27	0.40	.0007349	52.1	11 34 45.53
28	271	184 54 47.3	54 27.5	147.35	0.41	.0006100	52.0	11 30 49.62
29	272	185 53 44.5	53 24.6	147.43	0.39	.0004854	51.8	11 26 53.72
30	273	186 52 43.7	52 23.7	147.52	0.34	.0003612	51.7	11 22 57.81
31	274	187 51 45.1	51 25.0	147.61	−0.26	0.0002374	−51.5	11 19 1.90

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour
—9s.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 33.2	15 27.2	56 58.2	−1.82	56 36.4	−1.80	14 18.0	1.86	16.2
2	15 21.4	15 15.9	56 15.1	1.74	55 54.7	1.66	15 2.3	1.83	17.2
3	15 10.6	15 5.8	55 35.5	1.54	55 17.8	1.40	15 46.2	1.84	18.2
4	15 1.5	14 57.8	55 1.9	1.24	54 48.1	1.06	16 30.7	1.87	19.2
5	14 54.6	14 52.1	54 36.6	0.86	54 27.4	0.66	17 16.3	1.93	20.2
6	14 50.3	14 49.2	54 20.8	0.45	54 16.7	−0.23	18 3.4	2.00	21.2
7	14 48.8	14 49.1	54 15.3	−0.01	54 16.4	+0.20	18 52.0	2.06	22.2
8	14 50.1	14 51.8	54 20.1	+0.41	54 26.2	0.61	19 41.9	2.10	23.2
9	14 54.1	14 57.0	54 34.6	0.80	54 45.3	0.97	20 32.4	2.11	24.2
10	15 0.4	15 4.3	54 57.9	1.13	55 12.3	1.27	21 22.8	2.09	25.2
11	15 8.7	15 13.4	55 28.2	1.38	55 45.4	1.47	22 12.6	2.05	26.2
12	15 18.3	15 23.3	56 3.4	1.53	56 22.1	1.57	23 1.4	2.01	27.2
13	15 28.5	15 33.6	56 41.0	1.58	56 59.8	1.56	23 49.3	1.98	28.2
14	15 38.6	15 43.5	57 18.3	1.51	57 36.0	1.44	6		29.2
15	15 48.0	15 52.3	57 52.8	1.35	58 8.3	1.24	0 36.8	1.98	0.7
16	15 56.1	15 59.6	58 22.5	1.11	58 35.1	0.98	1 24.6	2.01	1.7
17	16 2.5	16 5.0	58 46.0	0.84	58 55.2	0.70	2 13.4	2.08	2.7
18	16 7.1	16 8.7	59 2.8	0.56	59 8.7	0.42	3 4.3	2.18	3.7
19	16 9.9	16 10.7	59 13.0	0.30	59 15.8	+0.17	3 57.9	2.30	4.7
20	16 11.0	16 11.1	59 17.2	+0.06	59 17.3	−0.04	4 54.4	2.42	5.7
21	16 10.8	16 10.1	59 16.2	−0.14	59 13.8	0.24	5 53.5	2.50	6.7
22	16 9.2	16 7.9	59 10.4	0.34	59 5.8	0.43	6 53.8	2.51	7.7
23	16 6.4	16 4.5	59 0.1	0.52	58 53.2	0.62	7 53.7	2.45	8.7
24	16 2.3	15 59.8	58 45.2	0.72	58 36.0	0.82	8 51.2	2.33	9.7
25	15 57.0	15 53.8	58 25.5	0.92	58 13.9	1.02	9 45.5	2.19	10.7
26	15 50.3	15 46.5	58 1.1	1.11	57 47.2	1.20	10 36.4	2.05	11.7
27	15 42.4	15 38.2	57 32.2	1.28	57 16.4	1.35	11 24.4	1.95	12.7
28	15 33.7	15 29.0	56 59.9	1.40	56 42.9	1.43	12 10.2	1.88	13 7
29	15 24.3	15 19.6	56 25.6	1.45	56 8.3	1.44	12 54.8	1.84	14.7
30	15 15.0	15 10.5	55 51.2	1.40	55 34.7	1.35	13 39.0	1.84	15.7
31	15 6.2	15 2.2	55 19.0	−1.26	55 4.4	−1.16	14 23.6	1.87	16.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 1.					**SUNDAY 3.**				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	0 32 48.77	2.0032	S. 1 52 47.7	13.408	0	2 6 53.63	1.9399	N. 8 26 4.9	12.050
1	0 34 48.88	2.0004	1 39 23.4	13.401	1	2 8 50.02	1.9399	8 38 6.5	12.002
2	0 36 48.82	1.9978	1 25 59.6	13.392	2	2 10 46.41	1.9400	8 50 5.2	11.953
3	0 38 48.61	1.9952	1 12 36.3	13.383	3	2 12 42.82	1.9402	9 2 0.9	11.903
4	0 40 48.24	1.9926	0 59 13.6	13.373	4	2 14 39.25	1.9405	9 13 53.6	11.853
5	0 42 47.72	1.9901	0 45 51.5	13.363	5	2 16 35.68	1.9408	9 25 43.3	11.803
6	0 44 47.05	1.9875	0 32 30.0	13.351	6	2 18 32.14	1.9412	9 37 30.0	11.752
7	0 46 46.23	1.9851	0 19 9.3	13.338	7	2 20 28.62	1.9416	9 49 13.6	11.700
8	0 48 45.27	1.9830	S. 0 5 49.4	13.324	8	2 22 25.12	1.9420	10 0 54.0	11.647
9	0 50 44.18	1.9806	N. 0 7 29.6	13.309	9	2 24 21.65	1.9425	10 12 31.2	11.593
10	0 52 42.95	1.9784	0 20 47.7	13.294	10	2 26 18.22	1.9430	10 24 5.2	11.539
11	0 54 41.59	1.9763	0 34 4.9	13.278	11	2 28 14.81	1.9436	10 35 35.9	11.484
12	0 56 40.11	1.9743	0 47 21.1	13.261	12	2 30 11.44	1.9443	10 47 3.3	11.429
13	0 58 38.51	1.9723	1 0 36.2	13.242	13	2 32 8.12	1.9450	10 58 27.4	11.373
14	1 0 36.78	1.9703	1 13 50.1	13.221	14	2 34 4.84	1.9457	11 9 48.1	11.317
15	1 2 34.94	1.9685	1 27 2.7	13.200	15	2 36 1.61	1.9464	11 21 5.4	11.259
16	1 4 33.00	1.9667	1 40 14.1	13.179	16	2 37 58.41	1.9473	11 32 19.2	11.201
17	1 6 30.94	1.9649	1 53 24.2	13.157	17	2 39 55.28	1.9483	11 43 29.5	11.142
18	1 8 28.78	1.9631	2 6 32.9	13.133	18	2 41 52.20	1.9492	11 54 36.3	11.083
19	1 10 26.52	1.9615	2 19 40.2	13.109	19	2 43 49.18	1.9501	12 5 39.5	11.023
20	1 12 24.16	1.9600	2 32 46.0	13.084	20	2 45 46.21	1.9511	12 16 39.1	10.963
21	1 14 21.72	1.9584	2 45 50.3	13.058	21	2 47 43.31	1.9522	12 27 35.1	10.902
22	1 16 19.18	1.9569	2 58 53.0	13.031	22	2 49 40.47	1.9533	12 38 27.4	10.840
23	1 18 16.55	1.9556	N. 3 11 54.0	13.003	23	2 51 37.70	1.9544	N.12 49 15.9	10.777
SATURDAY 2.					**MONDAY 4.**				
0	1 20 13.85	1.9543	N. 3 24 53.3	12.974	0	2 53 35.00	1.9556	N.13 0 0.6	10.713
1	1 22 11.07	1.9530	3 37 50.9	12.946	1	2 55 32.37	1.9568	13 10 41.5	10.650
2	1 24 8.21	1.9517	3 50 46.8	12.917	2	2 57 29.82	1.9580	13 21 18.6	10.586
3	1 26 5.28	1.9506	4 3 40.9	12.886	3	2 59 27.34	1.9594	13 31 51.8	10.521
4	1 28 2.28	1.9496	4 16 33.1	12.853	4	3 1 24.95	1.9608	13 42 21.1	10.455
5	1 29 59.23	1.9485	4 29 23.3	12.820	5	3 3 22.64	1.9622	13 52 46.4	10.389
6	1 31 56.10	1.9475	4 42 11.5	12.786	6	3 5 20.42	1.9637	14 3 7.8	10.320
7	1 33 52.93	1.9466	4 54 57.6	12.751	7	3 7 18.28	1.9651	14 13 25.2	10.256
8	1 35 49.70	1.9458	5 7 41.6	12.716	8	3 9 16.23	1.9666	14 23 38.5	10.187
9	1 37 46.42	1.9450	5 20 23.5	12.681	9	3 11 14.27	1.9682	14 33 47.7	10.118
10	1 39 43.10	1.9443	5 33 3.3	12.644	10	3 13 12.41	1.9698	14 43 52.7	10.048
11	1 41 39.73	1.9436	5 45 40.8	12.606	11	3 15 10.64	1.9714	14 53 53.5	9.978
12	1 43 36.33	1.9430	5 58 16.0	12.567	12	3 17 8.97	1.9730	15 3 50.1	9.908
13	1 45 32.89	1.9424	6 10 48.8	12.528	13	3 19 7.40	1.9747	15 13 42.5	9.837
14	1 47 29.41	1.9419	6 23 19.3	12.489	14	3 21 5.93	1.9764	15 23 30.6	9.766
15	1 49 25.91	1.9414	6 35 47.5	12.450	15	3 23 4.57	1.9782	15 33 14.4	9.694
16	1 51 22.38	1.9410	6 48 13.3	12.408	16	3 25 3.32	1.9800	15 42 53.9	9.622
17	1 53 18.83	1.9407	7 0 36.5	12.365	17	3 27 2.17	1.9818	15 52 29.0	9.548
18	1 55 15.26	1.9404	7 12 57.1	12.322	18	3 29 1.13	1.9837	16 1 59.6	9.473
19	1 57 11.68	1.9401	7 25 15.1	12.279	19	3 31 0.22	1.9856	16 11 25.8	9.399
20	1 59 8.07	1.9400	7 37 30.5	12.235	20	3 32 59.41	1.9875	16 20 47.5	9.324
21	2 1 4.47	1.9400	7 49 43.3	12.190	21	3 34 58.72	1.9895	16 30 4.7	9.248
22	2 3 0.86	1.9398	8 1 53.3	12.144	22	3 36 58.14	1.9914	16 39 17.3	9.172
23	2 4 57.24	1.9398	8 14 0.5	12.097	23	3 38 57.68	1.9934	16 48 25.3	9.095
24	2 6 53.63	1.9399	N. 8 26 4.9	12.050	24	3 40 57.35	1.9955	N.16 57 28.7	9.017

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GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 5.					THURSDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	3 40 57.35	1.9955	N.16 57 28.7	9.017	0	5 19 25.07	2.1099	N.22 30 33.2	4.657
1	3 42 57.14	1.9975	17 6 27.4	8.939	1	5 21 31.74	2.1123	22 35 9.5	4.553
2	3 44 57.05	1.9996	17 15 21.4	8.861	2	5 23 38.55	2.1147	22 39 39.6	4.450
3	3 46 57.09	2.0017	17 24 10.7	8.782	3	5 25 45.50	2.1170	22 44 3.5	4.346
4	3 48 57.26	2.0038	17 32 55.3	8.702	4	5 27 52.59	2.1194	22 48 21.1	4.241
5	3 50 57.55	2.0060	17 41 35.0	8.622	5	5 29 59.82	2.1217	22 52 32.4	4.136
6	3 52 57.98	2.0081	17 50 9.9	8.541	6	5 32 7.19	2.1239	22 56 37.4	4.031
7	3 54 58.53	2.0103	17 58 39.9	8.459	7	5 34 14.69	2.1262	23 0 36.1	3.925
8	3 56 59.22	2.0126	18 7 5.0	8.377	8	5 36 22.33	2.1285	23 4 28.4	3.818
9	3 59 0.05	2.0150	18 15 25.2	8.295	9	5 38 30.11	2.1307	23 8 14.3	3.711
10	4 1 1.01	2.0172	18 23 40.4	8.212	10	5 40 38.02	2.1330	23 11 53.7	3.603
11	4 3 2.11	2.0194	18 31 50.6	8.128	11	5 42 46.07	2.1351	23 15 26.7	3.496
12	4 5 3.34	2.0217	18 39 55.7	8.043	12	5 44 54.24	2.1373	23 18 53.8	3.389
13	4 7 4.71	2.0241	18 47 55.8	7.959	13	5 47 2.54	2.1395	23 22 13.4	3.280
14	4 9 6.23	2.0265	18 55 50.8	7.873	14	5 49 10.97	2.1416	23 25 26.9	3.171
15	4 11 7.89	2.0288	19 3 40.6	7.787	15	5 51 19.53	2.1437	23 28 33.9	3.062
16	4 13 9.69	2.0311	19 11 25.2	7.700	16	5 53 28.21	2.1457	23 31 34.4	2.953
17	4 15 11.63	2.0335	19 19 4.6	7.613	17	5 55 37.01	2.1478	23 34 28.3	2.843
18	4 17 13.71	2.0359	19 26 38.8	7.526	18	5 57 45.94	2.1497	23 37 15.5	2.732
19	4 19 15.94	2.0383	19 34 7.8	7.439	19	5 59 54.98	2.1516	23 39 56.1	2.622
20	4 21 18.31	2.0408	19 41 31.5	7.350	20	6 2 4.13	2.1536	23 42 30.1	2.511
21	4 23 20.83	2.0433	19 48 49.8	7.261	21	6 4 13.41	2.1556	23 44 57.4	2.399
22	4 25 23.50	2.0457	19 56 2.8	7.172	22	6 6 22.80	2.1574	23 47 18.0	2.287
23	4 27 26.31	2.0481	N.20 3 10.4	7.081	23	6 8 32.30	2.1592	N.23 49 31.9	2.175
	WEDNESDAY 6.					FRIDAY 8.			
0	4 29 29.27	2.0506	N.20 10 12.5	6.990	0	6 10 41.91	2.1610	N.23 51 39.0	2.062
1	4 31 32.38	2.0531	20 17 9.2	6.899	1	6 12 51.63	2.1629	23 53 39.4	1.950
2	4 33 35.64	2.0556	20 24 0.4	6.807	2	6 15 1.45	2.1646	23 55 33.0	1.837
3	4 35 39.05	2.0580	20 30 46.0	6.714	3	6 17 11.38	2.1664	23 57 19.8	1.723
4	4 37 42.60	2.0604	20 37 26.1	6.622	4	6 19 21.41	2.1680	23 58 59.8	1.610
5	4 39 46.30	2.0630	20 44 0.6	6.528	5	6 21 31.54	2.1696	24 0 33.0	1.496
6	4 41 50.16	2.0656	20 50 29.5	6.434	6	6 23 41.76	2.1712	24 1 59.3	1.381
7	4 43 54.17	2.0680	20 56 52.7	6.339	7	6 25 52.08	2.1728	24 3 18.7	1.267
8	4 45 58.32	2.0705	21 3 10.2	6.244	8	6 28 2.49	2.1743	24 4 31.3	1.152
9	4 48 2.63	2.0730	21 9 22.0	6.149	9	6 30 12.99	2.1757	24 5 37.0	1.037
10	4 50 7.09	2.0755	21 15 28.1	6.053	10	6 32 23.58	2.1772	24 6 35.8	0.922
11	4 52 11.69	2.0779	21 21 28.4	5.957	11	6 34 34.26	2.1787	24 7 27.7	0.806
12	4 54 16.44	2.0805	21 27 22.9	5.860	12	6 36 45.02	2.1800	24 8 12.6	0.690
13	4 56 21.35	2.0830	21 33 11.6	5.762	13	6 38 55.86	2.1812	24 8 50.5	0.574
14	4 58 26.40	2.0855	21 38 54.4	5.664	14	6 41 6.77	2.1825	24 9 21.5	0.458
15	5 0 31.60	2.0880	21 44 31.3	5.566	15	6 43 17.76	2.1838	24 9 45.5	0.342
16	5 2 36.96	2.0905	21 50 2.3	5.467	16	6 45 28.83	2.1850	24 10 2.5	0.225
17	5 4 42.46	2.0929	21 55 27.3	5.367	17	6 47 39.97	2.1861	24 10 12.5	+0.108
18	5 6 48.11	2.0954	22 0 46.3	5.267	18	6 49 51.17	2.1871	24 10 15.5	−0.009
19	5 8 53.90	2.0978	22 5 59.3	5.167	19	6 52 2.43	2.1882	24 10 11.5	0.126
20	5 10 59.84	2.1003	22 11 6.3	5.066	20	6 54 13.75	2.1892	24 10 0.4	0.244
21	5 13 5.93	2.1027	22 16 7.2	4.964	21	6 56 25.14	2.1903	24 9 42.2	0.362
22	5 15 12.17	2.1051	22 21 2.0	4.862	22	6 58 36.59	2.1913	24 9 17.0	0.479
23	5 17 18.55	2.1075	22 25 50.7	4.760	23	7 0 48.09	2.1921	24 8 44.7	0.597
24	5 19 25.07	2.1099	N.22 30 33.2	4.657	24	7 2 59.64	2.1929	N.24 8 5.3	0.716

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 9.					MONDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 2 59.64	2.1929	N.24 8 5.3	0.716	0	8 48 21.92	2.1816	N.21 17 51.3	6.326
1	7 5 11.24	2.1938	24 7 18.8	0.833	1	8 50 32.78	2.1804	21 11 28.4	6.437
2	7 7 22.89	2.1945	24 6 25.3	0.951	2	8 52 43.57	2.1791	21 4 58.8	6.548
3	7 9 34.58	2.1952	24 5 24.7	1.069	3	8 54 54.28	2.1779	20 58 22.6	6.658
4	7 11 46.31	2.1959	24 4 17.0	1.188	4	8 57 4.92	2.1767	20 51 39.8	6.768
5	7 13 58.08	2.1964	24 3 2.2	1.307	5	8 59 15.49	2.1755	20 44 50.4	6.878
6	7 16 9.88	2.1969	24 1 40.2	1.426	6	9 1 25.98	2.1741	20 37 54.4	6.987
7	7 18 21.71	2.1974	24 0 11.1	1.544	7	9 3 36.38	2.1728	20 30 51.9	7.096
8	7 20 33.57	2.1979	23 58 34.9	1.662	8	9 5 46.72	2.1716	20 23 42.9	7.205
9	7 22 45.46	2.1984	23 56 51.6	1.781	9	9 7 56.98	2.1703	20 16 27.3	7.313
10	7 24 57.38	2.1988	23 55 1.2	1.899	10	9 10 7.15	2.1689	20 9 5.3	7.420
11	7 27 9.32	2.1991	23 53 3.7	2.018	11	9 12 17.24	2.1674	20 1 36.9	7.526
12	7 29 21.27	2.1993	23 50 59.0	2.137	12	9 14 27.24	2.1660	19 54 2.2	7.632
13	7 31 33.24	2.1996	23 48 47.2	2.256	13	9 16 37.16	2.1646	19 46 21.1	7.737
14	7 33 45.23	2.1998	23 46 28.3	2.375	14	9 18 46.99	2.1632	19 38 33.7	7.842
15	7 35 57.22	2.1999	23 44 2.2	2.494	15	9 20 56.74	2.1618	19 30 40.0	7.947
16	7 38 9.22	2.2001	23 41 29.0	2.612	16	9 23 6.40	2.1602	19 22 40.0	8.052
17	7 40 21.23	2.2002	23 38 48.7	2.731	17	9 25 15.97	2.1587	19 14 33.8	8.155
18	7 42 33.24	2.2001	23 36 1.3	2.849	18	9 27 25.45	2.1572	19 6 21.4	8.257
19	7 44 45.24	2.2001	23 33 6.8	2.968	19	9 29 34.84	2.1557	18 58 2.9	8.360
20	7 46 57.25	2.2001	23 30 5.1	3.087	20	9 31 44.14	2.1542	18 49 38.2	8.462
21	7 49 9.25	2.1999	23 26 56.3	3.206	21	9 33 53.35	2.1527	18 41 7.4	8.563
22	7 51 21.24	2.1997	23 23 40.4	3.324	22	9 36 2.47	2.1512	18 32 30.6	8.664
23	7 53 33.22	2.1995	N.23 20 17.5	3.441	23	9 38 11.49	2.1496	N.18 23 47.7	8.765
	SUNDAY 10.					TUESDAY 12.			
0	7 55 45.19	2.1993	N.23 16 47.5	3.559	0	9 40 20.42	2.1481	N.18 14 58.8	8.864
1	7 57 57.14	2.1990	23 13 10.4	3.677	1	9 42 29.26	2.1465	18 6 4.0	8.962
2	8 0 9.07	2.1987	23 9 26.2	3.795	2	9 44 38.00	2.1450	17 57 3.4	9.059
3	8 2 20.98	2.1984	23 5 35.0	3.912	3	9 46 46.65	2.1434	17 47 56.9	9.156
4	8 4 32.86	2.1980	23 1 36.7	4.030	4	9 48 55.20	2.1418	17 38 44.6	9.252
5	8 6 44.74	2.1974	22 57 31.4	4.147	5	9 51 3.66	2.1403	17 29 26.6	9.348
6	8 8 56.55	2.1967	22 53 19.0	4.265	6	9 53 12.03	2.1388	17 20 2.8	9.444
7	8 11 8.35	2.1963	22 48 59.6	4.382	7	9 55 20.31	2.1371	17 10 33.3	9.539
8	8 13 20.11	2.1958	22 44 33.2	4.498	8	9 57 28.49	2.1355	17 0 58.1	9.633
9	8 15 31.84	2.1952	22 39 59.9	4.614	9	9 59 36.58	2.1340	16 51 17.3	9.726
10	8 17 43.53	2.1945	22 35 19.6	4.730	10	10 1 44.57	2.1324	16 41 31.0	9.818
11	8 19 55.18	2.1939	22 30 32.3	4.846	11	10 3 52.47	2.1308	16 31 39.2	9.909
12	8 22 6.79	2.1931	22 25 38.0	4.962	12	10 6 0.27	2.1292	16 21 41.9	10.000
13	8 24 18.35	2.1924	22 20 36.8	5.077	13	10 8 7.98	2.1277	16 11 39.2	10.090
14	8 26 29.87	2.1915	22 15 28.7	5.192	14	10 10 15.60	2.1262	16 1 31.1	10.180
15	8 28 41.33	2.1905	22 10 13.7	5.307	15	10 12 23.13	2.1247	15 51 17.6	10.269
16	8 30 52.73	2.1897	22 4 51.8	5.422	16	10 14 30.57	2.1232	15 40 58.8	10.357
17	8 33 4.09	2.1889	21 59 23.0	5.536	17	10 16 37.91	2.1217	15 30 34.8	10.443
18	8 35 15.39	2.1879	21 53 47.4	5.650	18	10 18 45.17	2.1203	15 20 5.7	10.528
19	8 37 26.64	2.1869	21 48 5.0	5.763	19	10 20 52.34	2.1187	15 9 31.4	10.614
20	8 39 37.82	2.1859	21 42 15.8	5.877	20	10 22 59.41	2.1172	14 58 52.0	10.699
21	8 41 48.95	2.1848	21 36 19.8	5.990	21	10 25 6.40	2.1158	14 48 7.5	10.783
22	8 44 0.00	2.1836	21 30 17.0	6.102	22	10 27 13.31	2.1144	14 37 18.0	10.866
23	8 46 10.99	2.1826	21 24 7.5	6.214	23	10 29 20.12	2.1129	14 26 23.6	10.948
24	8 48 21.92	2.1816	N.21 17 51.3	6.326	24	10 31 26.86	2.1116	N.14 15 24.2	11.030

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 13.					FRIDAY 15.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 31 26.86	2.1116	N.14 15 24.2	11.030	0	12 11 41.90	2.0798	N. 4 10 24.8	13.782
1	10 33 33.51	2.1101	14 4 20.0	11.110	1	12 13 46.70	2.0802	3 56 36.9	13.813
2	10 35 40.08	2.1087	13 53 11.0	11.189	2	12 15 51.52	2.0805	3 42 47.2	13.842
3	10 37 46.56	2.1074	13 41 57.3	11.267	3	12 17 56.36	2.0809	3 28 55.8	13.870
4	10 39 52.97	2.1061	13 30 38.9	11.345	4	12 20 1.23	2.0814	3 15 2.8	13.897
5	10 41 59.29	2.1047	13 19 15.9	11.422	5	12 22 6.13	2.0821	3 1 8.1	13.924
6	10 44 5.54	2.1035	13 7 48.3	11.497	6	12 24 11.08	2.0827	2 47 11.9	13.949
7	10 46 11.71	2.1022	12 56 16.2	11.572	7	12 26 16.06	2.0833	2 33 14.2	13.972
8	10 48 17.81	2.1010	12 44 39.6	11.647	8	12 28 21.08	2.0840	2 19 15.2	13.994
9	10 50 23.83	2.0997	12 32 58.5	11.721	9	12 30 26.14	2.0848	2 5 14.9	14.016
10	10 52 29.78	2.0985	12 21 13.1	11.793	10	12 32 31.26	2.0856	1 51 13.3	14.036
11	10 54 35.65	2.0973	12 9 23.4	11.864	11	12 34 36.43	2.0866	1 37 10.6	14.054
12	10 56 41.46	2.0963	11 57 29.4	11.935	12	12 36 41.65	2.0875	1 23 6.8	14.072
13	10 58 47.20	2.0952	11 45 31.2	12.004	13	12 38 46.93	2.0885	1 9 2.0	14.088
14	11 0 52.88	2.0941	11 33 28.9	12.072	14	12 40 52.27	2.0897	0 54 56.3	14.102
15	11 2 58.49	2.0931	11 21 22.5	12.140	15	12 42 57.69	2.0909	0 40 49.8	14.115
16	11 5 4.05	2.0921	11 9 12.1	12.206	16	12 45 3.17	2.0919	0 26 42.5	14.128
17	11 7 9.54	2.0910	10 56 57.8	12.271	17	12 47 8.72	2.0931	N. 0 12 34.4	14.141
18	11 9 14.96	2.0900	10 44 39.6	12.336	18	12 49 14.34	2.0944	S. 0 1 34.4	14.151
19	11 11 20.34	2.0892	10 32 17.5	12.401	19	12 51 20.04	2.0958	0 15 43.7	14.158
20	11 13 25.66	2.0883	10 19 51.5	12.464	20	12 53 25.83	2.0972	0 29 53.4	14.164
21	11 15 30.93	2.0875	10 7 21.8	12.525	21	12 55 31.70	2.0986	0 44 3.4	14.169
22	11 17 36.15	2.0866	9 54 48.5	12.585	22	12 57 37.66	2.1001	0 58 13.7	14.175
23	11 19 41.31	2.0857	N. 9 42 11.6	12.644	23	12 59 43.71	2.1017	S. 1 12 24.4	14.180
	THURSDAY 14.					SATURDAY 16.			
0	11 21 46.43	2.0850	N. 9 29 31.2	12.702	0	13 1 49.86	2.1033	S. 1 26 35.3	14.182
1	11 23 51.51	2.0844	9 16 47.3	12.760	1	13 3 56.10	2.1049	1 40 46.3	14.182
2	11 25 56.56	2.0837	9 4 0.0	12.817	2	13 6 2.45	2.1067	1 54 57.2	14.181
3	11 28 1.56	2.0829	8 51 9.3	12.872	3	13 8 8.90	2.1086	2 9 8.0	14.178
4	11 30 6.51	2.0823	8 38 15.3	12.927	4	13 10 15.48	2.1105	2 23 18.6	14.175
5	11 32 11.44	2.0818	8 25 18.1	12.980	5	13 12 22.16	2.1123	2 37 29.0	14.171
6	11 34 16.33	2.0813	8 12 17.7	13.032	6	13 14 28.95	2.1142	2 51 39.1	14.166
7	11 36 21.20	2.0808	7 59 14.2	13.083	7	13 16 35.86	2.1163	3 5 48.9	14.159
8	11 38 26.03	2.0803	7 46 7.7	13.133	8	13 18 42.90	2.1185	3 19 58.2	14.150
9	11 40 30.84	2.0800	7 32 58.2	13.182	9	13 20 50.08	2.1206	3 34 6.9	14.139
10	11 42 35.63	2.0796	7 19 45.8	13.230	10	13 22 57.37	2.1228	3 48 14.9	14.128
11	11 44 40.39	2.0793	7 6 30.6	13.277	11	13 25 4.80	2.1250	4 2 22.2	14.116
12	11 46 45.15	2.0791	6 53 12.6	13.322	12	13 27 12.37	2.1273	4 16 28.8	14.102
13	11 48 49.88	2.0788	6 39 51.9	13.367	13	13 29 20.08	2.1297	4 30 34.5	14.087
14	11 50 54.61	2.0788	6 26 28.5	13.411	14	13 31 27.93	2.1321	4 44 39.2	14.069
15	11 52 59.34	2.0787	6 13 2.6	13.453	15	13 33 35.93	2.1345	4 58 42.8	14.061
16	11 55 4.06	2.0785	5 59 34.2	13.494	16	13 35 44.08	2.1371	5 12 45.3	14.032
17	11 57 8.76	2.0784	5 46 3.3	13.534	17	13 37 52.39	2.1398	5 26 46.6	14.011
18	11 59 13.47	2.0786	5 32 30.1	13.573	18	13 40 0.85	2.1424	5 40 46.6	13.989
19	12 1 18.19	2.0787	5 18 54.6	13.611	19	13 42 9.47	2.1451	5 54 45.3	13.966
20	12 3 22.91	2.0787	5 5 16.8	13.647	20	13 44 18.26	2.1479	6 8 42.5	13.940
21	12 5 27.63	2.0788	4 51 36.9	13.682	21	13 46 27.22	2.1507	6 22 38.1	13.913
22	12 7 32.37	2.0791	4 37 54.9	13.717	22	13 48 36.35	2.1537	6 36 32.1	13.886
23	12 9 37.12	2.0794	4 24 10.8	13.751	23	13 50 45.66	2.1566	6 50 24.4	13.857
24	12 11 41.90	2.0798	N. 4 10 24.8	13.782	24	13 52 55.14	2.1595	S. 7 4 14.9	13.827

GREENWICH MEAN TIME

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 52 55.14	2.1595	S. 7 4 14.9	13.827
1	13 55 4.80	2.1625	7 18 3.6	13.795
2	13 57 14.64	2.1657	7 31 50.3	13.761
3	13 59 24.68	2.1689	7 45 34.9	13.725
4	14 1 34.91	2.1721	7 59 17.3	13.688
5	14 3 45.32	2.1753	8 12 57.5	13.651
6	14 5 55.94	2.1787	8 26 35.4	13.612
7	14 8 6.76	2.1820	8 40 11.0	13.572
8	14 10 17.78	2.1854	8 53 44.1	13.530
9	14 12 29.01	2.1890	9 7 14.6	13.486
10	14 14 40.46	2.1925	9 20 42.4	13.441
11	14 16 52.11	2.1960	9 34 7.5	13.396
12	14 19 3.98	2.1997	9 47 29.9	13.349
13	14 21 16.07	2.2033	10 0 49.4	13.299
14	14 23 28.38	2.2071	10 14 5.8	13.247
15	14 25 40.92	2.2107	10 27 19.1	13.195
16	14 27 53.67	2.2146	10 40 29.2	13.142
17	14 30 6.67	2.2185	10 53 36.1	13.088
18	14 32 19.89	2.2223	11 6 39.7	13.032
19	14 34 33.35	2.2262	11 19 39.9	12.973
20	14 36 47.04	2.2302	11 32 36.5	12.913
21	14 39 0.98	2.2343	11 45 29.5	12.852
22	14 41 15.16	2.2384	11 58 18.8	12.790
23	14 43 29.59	2.2425	S. 12 11 4.3	12.727

MONDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 45 44.26	2.2467	S. 12 23 46.0	12.662
1	14 47 59.19	2.2508	12 36 23.7	12.595
2	14 50 14.36	2.2550	12 48 57.4	12.527
3	14 52 29.79	2.2593	13 1 26.9	12.457
4	14 54 45.48	2.2676	13 13 52.2	12.386
5	14 57 1.42	2.2679	13 26 13.2	12.314
6	14 59 17.63	2.2723	13 38 29.9	12.241
7	15 1 34.10	2.2767	13 50 42.1	12.165
8	15 3 50.84	2.2811	14 2 49.7	12.087
9	15 6 7.83	2.2855	14 14 52.6	12.008
10	15 8 25.10	2.2901	14 26 50.7	11.929
11	15 10 42.64	2.2946	14 38 44.1	11.849
12	15 13 0.45	2.2992	14 50 32.6	11.767
13	15 15 18.54	2.3037	15 2 16.1	11.682
14	15 17 36.90	2.3083	15 13 54.4	11.595
15	15 19 55.54	2.3130	15 25 27.5	11.508
16	15 22 14.46	2.3175	15 36 55.4	11.421
17	15 24 33.64	2.3221	15 48 18.0	11.331
18	15 26 53.11	2.3269	15 59 35.1	11.239
19	15 29 12.87	2.3316	16 10 46.7	11.147
20	15 31 32.91	2.3362	16 21 52.7	11.052
21	15 33 53.22	2.3408	16 32 53.0	10.957
22	15 36 13.82	2.3457	16 43 47.5	10.859
23	15 38 34.70	2.3503	16 54 36.1	10.760
24	15 40 55.86	2.3550	S. 17 5 18.7	10.660

TUESDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 40 55.86	2.3550	S. 17 5 18.7	10.660
1	15 43 17.30	2.3597	17 15 55.3	10.559
2	15 45 39.03	2.3646	17 26 25.8	10.457
3	15 48 1.05	2.3694	17 36 50.2	10.354
4	15 50 23.35	2.3741	17 47 8.3	10.248
5	15 52 45.94	2.3788	17 57 20.0	10.141
6	15 55 8.81	2.3835	18 7 25.2	10.032
7	15 57 31.96	2.3881	18 17 23.8	9.922
8	15 59 55.39	2.3929	18 27 15.8	9.811
9	16 2 19.11	2.3977	18 37 1.1	9.699
10	16 4 43.11	2.4024	18 46 39.7	9.586
11	16 7 7.40	2.4071	18 56 11.4	9.470
12	16 9 31.96	2.4118	19 5 36.1	9.353
13	16 11 56.80	2.4164	19 14 53.8	9.236
14	16 14 21.92	2.4210	19 24 4.4	9.117
15	16 16 47.32	2.4256	19 33 7.9	8.997
16	16 19 12.99	2.4300	19 42 4.1	8.875
17	16 21 38.93	2.4346	19 50 52.9	8.752
18	16 24 5.15	2.4393	19 59 34.4	8.629
19	16 26 31.64	2.4438	20 8 8.4	8.503
20	16 28 58.40	2.4482	20 16 34.8	8.376
21	16 31 25.42	2.4525	20 24 53.5	8.247
22	16 33 52.70	2.4569	20 33 4.5	8.119
23	16 36 20.25	2.4614	S. 20 41 7.8	7.990

WEDNESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 38 48.07	2.4657	S. 20 49 3.3	7.858
1	16 41 16.13	2.4699	20 56 50.8	7.725
2	16 43 44.45	2.4742	21 4 30.3	7.591
3	16 46 13.03	2.4783	21 12 1.7	7.456
4	16 48 41.84	2.4824	21 19 25.0	7.320
5	16 51 10.90	2.4864	21 26 40.1	7.183
6	16 53 40.21	2.4905	21 33 47.0	7.045
7	16 56 9.75	2.4944	21 40 45.5	6.905
8	16 58 39.53	2.4982	21 47 35.6	6.765
9	17 1 9.53	2.5020	21 54 17.3	6.624
10	17 3 39.77	2.5057	22 0 50.5	6.482
11	17 6 10.22	2.5094	22 7 15.1	6.337
12	17 8 40.90	2.5130	22 13 31.0	6.192
13	17 11 11.79	2.5166	22 19 38.2	6.047
14	17 13 42.89	2.5200	22 25 36.7	5.902
15	17 16 14.19	2.5235	22 31 26.4	5.754
16	17 18 45.71	2.5268	22 37 7.2	5.606
17	17 21 17.41	2.5300	22 42 39.1	5.457
18	17 23 49.31	2.5331	22 48 2.0	5.307
19	17 26 21.39	2.5362	22 53 15.9	5.156
20	17 28 53.66	2.5392	22 58 20.7	5.004
21	17 31 26.09	2.5421	23 3 16.4	4.852
22	17 33 58.71	2.5450	23 8 2.9	4.699
23	17 36 31.48	2.5478	23 12 40.2	4.545
24	17 39 4.43	2.5505	S. 23 17 8.3	4.391

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 39 4.43	2.5505	S. 23 17 8.3	4.391
1	17 41 37.53	2.5528	23 21 27.1	4.235
2	17 44 10.77	2.5551	23 25 36.5	4.078
3	17 46 44.15	2.5575	23 29 36.5	3.922
4	17 49 17.68	2.5598	23 33 27.1	3.765
5	17 51 51.33	2.5619	23 37 8.3	3.607
6	17 54 25.11	2.5640	23 40 40.0	3.449
7	17 56 59.01	2.5660	23 44 2.2	3.290
8	17 59 33.02	2.5678	23 47 14.8	3.130
9	18 2 7.14	2.5694	23 50 17.8	2.971
10	18 4 41.34	2.5709	23 53 11.3	2.812
11	18 7 15.65	2.5726	23 55 55.2	2.652
12	18 9 50.05	2.5740	23 58 29.5	2.491
13	18 12 24.53	2.5753	24 0 54.1	2.328
14	18 14 59.08	2.5763	24 3 8.9	2.165
15	18 17 33.69	2.5773	24 5 13.9	2.003
16	18 20 8.36	2.5783	24 7 9.2	1.841
17	18 22 43.09	2.5792	24 8 54.8	1.678
18	18 25 17.87	2.5799	24 10 30.6	1.515
19	18 27 52.68	2.5804	24 11 56.6	1.352
20	18 30 27.52	2.5809	24 13 12.8	1.189
21	18 33 2.39	2.5813	24 14 19.3	1.026
22	18 35 37.28	2.5816	24 15 16.0	0.862
23	18 38 12.18	2.5817	S. 24 16 2.8	0.697

FRIDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 40 47.09	2.5817	S. 24 16 39.7	0.533
1	18 43 21.99	2.5816	24 17 6.8	0.370
2	18 45 56.88	2.5813	24 17 24.1	0.208
3	18 48 31.75	2.5809	24 17 31.7	−0.045
4	18 51 6.59	2.5804	24 17 29.5	+0.119
5	18 53 41.40	2.5798	24 17 17.4	0.283
6	18 56 16.17	2.5791	24 16 55.5	0.446
7	18 58 50.90	2.5783	24 16 23.8	0.609
8	19 1 25.57	2.5773	24 15 42.4	0.772
9	19 4 0.18	2.5763	24 14 51.2	0.935
10	19 6 34.73	2.5752	24 13 50.2	1.097
11	19 9 9.20	2.5738	24 12 39.5	1.260
12	19 11 43.59	2.5724	24 11 19.0	1.422
13	19 14 17.89	2.5708	24 9 48.8	1.583
14	19 16 52.09	2.5692	24 8 9.0	1.744
15	19 19 26.19	2.5674	24 6 19.5	1.905
16	19 22 0.18	2.5656	24 4 20.4	2.065
17	19 24 34.06	2.5636	24 2 11.7	2.225
18	19 27 7.81	2.5615	23 59 53.4	2.385
19	19 29 41.44	2.5593	23 57 25.5	2.544
20	19 32 14.93	2.5570	23 54 48.1	2.702
21	19 34 48.28	2.5546	23 52 1.2	2.860
22	19 37 21.48	2.5520	23 49 4.9	3.018
23	19 39 54.52	2.5494	23 45 59.1	3.175
24	19 42 27.41	2.5467	S. 23 42 43.9	3.331

SATURDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 42 27.41	2.5467	S. 23 42 43.9	3.331
1	19 45 0.13	2.5439	23 39 19.4	3.486
2	19 47 32.67	2.5409	23 35 45.6	3.641
3	19 50 5.03	2.5379	23 32 2.5	3.795
4	19 52 37.21	2.5347	23 28 10.2	3.947
5	19 55 9.20	2.5315	23 24 8.8	4.099
6	19 57 40.99	2.5282	23 19 58.3	4.251
7	20 0 12.58	2.5247	23 15 38.7	4.402
8	20 2 43.96	2.5213	23 11 10.1	4.552
9	20 5 15.13	2.5178	23 6 32.4	4.702
10	20 7 46.09	2.5140	23 1 45.8	4.850
11	20 10 16.81	2.5101	22 56 50.4	4.997
12	20 12 47.31	2.5064	22 51 46.2	5.143
13	20 15 17.58	2.5025	22 46 33.2	5.289
14	20 17 47.61	2.4984	22 41 11.5	5.433
15	20 20 17.39	2.4944	22 35 41.2	5.577
16	20 22 46.93	2.4903	22 30 2.3	5.719
17	20 25 16.22	2.4860	22 24 14.9	5.861
18	20 27 45.25	2.4816	22 18 19.0	6.002
19	20 30 14.01	2.4772	22 12 14.7	6.141
20	20 32 42.51	2.4728	22 6 2.1	6.279
21	20 35 10.75	2.4684	21 59 41.2	6.416
22	20 37 38.72	2.4639	21 53 12.1	6.552
23	20 40 6.41	2.4592	S. 21 46 34.9	6.687

SUNDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 42 33.82	2.4545	S. 21 39 49.6	6.821
1	20 45 0.95	2.4497	21 32 56.3	6.954
2	20 47 27.79	2.4450	21 25 55.1	7.086
3	20 49 54.35	2.4402	21 18 46.0	7.216
4	20 52 20.62	2.4353	21 11 29.2	7.344
5	20 54 46.59	2.4303	21 4 4.7	7.472
6	20 57 12.26	2.4254	20 56 32.5	7.599
7	20 59 37.64	2.4204	20 48 52.8	7.724
8	21 2 2.71	2.4154	20 41 5.6	7.849
9	21 4 27.48	2.4102	20 33 10.9	7.972
10	21 6 51.94	2.4050	20 25 8.9	8.093
11	21 9 16.09	2.3999	20 16 59.7	8.213
12	21 11 39.93	2.3948	20 8 43.3	8.333
13	21 14 3.46	2.3896	20 0 19.8	8.451
14	21 16 26.68	2.3843	19 51 49.2	8.567
15	21 18 49.58	2.3790	19 43 11.7	8.682
16	21 21 12.16	2.3738	19 34 27.3	8.796
17	21 23 34.43	2.3685	19 25 36.2	8.908
18	21 25 56.38	2.3632	19 16 38.4	9.018
19	21 28 18.01	2.3578	19 7 34.0	9.128
20	21 30 39.32	2.3524	18 58 23.0	9.237
21	21 33 0.30	2.3470	18 49 5.5	9.345
22	21 35 20.96	2.3417	18 39 41.6	9.451
23	21 37 41.30	2.3363	18 30 11.4	9.554
24	21 40 1.32	2.3308	S. 18 20 35.1	9.656

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 40 1.32	2.3308	S. 18 20 35.1	9.656
1	21 42 21.01	2.3255	18 10 52.7	9.758
2	21 44 40.38	2.3201	18 1 4.2	9.859
3	21 46 59.42	2.3147	17 51 9.6	9.959
4	21 49 18.14	2.3093	17 41 9.1	10.056
5	21 51 36.54	2.3039	17 31 2.9	10.151
6	21 53 54.61	2.2986	17 20 51.0	10.245
7	21 56 12.37	2.2932	17 10 33.5	10.338
8	21 58 29.79	2.2878	17 0 10.4	10.431
9	22 0 46.90	2.2824	16 49 41.8	10.522
10	22 3 3.68	2.2770	16 39 7.8	10.611
11	22 5 20.14	2.2716	16 28 28.5	10.697
12	22 7 36.27	2.2664	16 17 44.1	10.783
13	22 9 52.10	2.2610	16 6 54.5	10.868
14	22 12 7.60	2.2556	15 55 59.9	10.952
15	22 14 22.78	2.2503	15 45 0.3	11.034
16	22 16 37.64	2.2452	15 33 55.8	11.114
17	22 18 52.20	2.2400	15 22 46.6	11.192
18	22 21 6.44	2.2347	15 11 32.8	11.269
19	22 23 20.36	2.2295	15 0 14.4	11.345
20	22 25 33.98	2.2243	14 48 51.4	11.421
21	22 27 47.28	2.2192	14 37 23.9	11.495
22	22 30 0.28	2.2141	14 25 52.0	11.567
23	22 32 12.98	2.2090	S. 14 14 15.8	11.637

TUESDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 34 25.36	2.2038	S. 14 2 35.5	11.706
1	22 36 37.44	2.1990	13 50 51.1	11.773
2	22 38 49.24	2.1941	13 39 2.7	11.840
3	22 41 0.73	2.1890	13 27 10.3	11.905
4	22 43 11.92	2.1840	13 15 14.1	11.968
5	22 45 22.81	2.1792	13 3 14.1	12.031
6	22 47 33.42	2.1744	12 51 10.4	12.092
7	22 49 43.74	2.1696	12 39 3.1	12.151
8	22 51 53.77	2.1649	12 26 52.3	12.209
9	22 54 3.52	2.1600	12 14 38.0	12.266
10	22 56 12.98	2.1554	12 2 20.4	12.321
11	22 58 22.17	2.1507	11 49 59.5	12.375
12	23 0 31.07	2.1462	11 37 35.4	12.427
13	23 2 39.71	2.1416	11 25 8.2	12.479
14	23 4 48.06	2.1370	11 12 37.9	12.529
15	23 6 56.16	2.1326	11 0 4.7	12.577
16	23 9 3.98	2.1282	10 47 28.6	12.625
17	23 11 11.54	2.1238	10 34 49.7	12.670
18	23 13 18.83	2.1194	10 22 8.2	12.714
19	23 15 25.87	2.1152	10 9 24.1	12.757
20	23 17 32.65	2.1110	9 56 37.4	12.800
21	23 19 39.19	2.1067	9 43 48.1	12.842
22	23 21 45.46	2.1026	9 30 56.4	12.881
23	23 23 51.50	2.0986	9 18 2.4	12.918
24	23 25 57.29	2.0946	S. 9 5 6.2	12.954

WEDNESDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 25 57.29	2.0946	S. 9 5 6.2	12.954
1	23 28 2.85	2.0906	8 52 7.9	12.989
2	23 30 8.16	2.0866	8 39 7.5	13.024
3	23 32 13.24	2.0827	8 26 5.0	13.058
4	23 34 18.08	2.0789	8 13 0.5	13.090
5	23 36 22.71	2.0752	7 59 54.2	13.119
6	23 38 27.10	2.0714	7 46 46.2	13.148
7	23 40 31.27	2.0678	7 33 36.5	13.176
8	23 42 35.23	2.0642	7 20 25.1	13.202
9	23 44 38.98	2.0605	7 7 12.2	13.227
10	23 46 42.50	2.0570	6 53 57.8	13.252
11	23 48 45.82	2.0536	6 40 42.0	13.275
12	23 50 48.93	2.0502	6 27 24.8	13.297
13	23 52 51.85	2.0468	6 14 6.4	13.317
14	23 54 54.55	2.0435	6 0 46.8	13.336
15	23 56 57.07	2.0405	5 47 26.1	13.354
16	23 58 59.40	2.0372	5 34 4.3	13.372
17	0 1 1.54	2.0340	5 20 41.5	13.387
18	0 3 3.49	2.0310	5 7 17.9	13.400
19	0 5 5.26	2.0281	4 53 53.5	13.413
20	0 7 6.86	2.0252	4 40 28.3	13.426
21	0 9 8.28	2.0223	4 27 2.3	13.436
22	0 11 9.53	2.0194	4 13 35.7	13.447
23	0 13 10.61	2.0165	S. 4 0 8.6	13.455

THURSDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 15 11.51	2.0138	S. 3 46 41.1	13.462
1	0 17 12.27	2.0111	3 33 13.2	13.469
2	0 19 12.85	2.0085	3 19 44.9	13.475
3	0 21 13.29	2.0061	3 6 16.2	13.479
4	0 23 13.58	2.0036	2 52 47.3	13.482
5	0 25 13.72	2.0012	2 39 18.3	13.483
6	0 27 13.72	1.9988	2 25 49.3	13.483
7	0 29 13.58	1.9965	2 12 20.3	13.483
8	0 31 13.30	1.9942	1 58 51.3	13.482
9	0 33 12.88	1.9920	1 45 22.4	13.480
10	0 35 12.33	1.9899	1 31 53.7	13.477
11	0 37 11.66	1.9878	1 18 25.2	13.472
12	0 39 10.87	1.9860	1 4 57.0	13.467
13	0 41 9.99	1.9838	0 51 29.2	13.459
14	0 43 8.93	1.9819	0 38 1.9	13.451
15	0 45 7.79	1.9800	0 24 35.1	13.442
16	0 47 6.54	1.9783	S. 0 11 8.8	13.433
17	0 49 5.18	1.9764	N. 0 2 16.9	13.422
18	0 51 3.71	1.9747	0 15 41.9	13.411
19	0 53 2.15	1.9732	0 29 6.2	13.398
20	0 55 0.49	1.9717	0 42 29.7	13.384
21	0 56 58.75	1.9701	0 55 52.3	13.369
22	0 58 56.90	1.9686	1 9 14.0	13.353
23	1 0 54.98	1.9673	1 22 34.7	13.336
24	1 2 52.97	1.9659	N. 1 35 54.3	13.317

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 29.					SATURDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	1 2 52.97	1.9659	N. 1 35 54.3	13.317	0	1 49 48.63	1.9498	N. 6 48 5.1	12.610
1	1 4 50.88	1.9646	1 49 12.8	13.298	1	1 51 45.62	1.9498	7 0 40.5	12.569
2	1 6 48.72	1.9634	2 2 30.1	13.278	2	1 53 42.61	1.9499	7 13 13.4	12.527
3	1 8 46.48	1.9622	2 15 46.2	13.258	3	1 55 39.61	1.9499	7 25 43.8	12.485
4	1 10 44.18	1.9610	2 29 1.1	13.237	4	1 57 36.60	1.9500	7 38 11.6	12.442
5	1 12 41.81	1.9600	2 42 14.7	13.215	5	1 59 33.61	1.9503	7 50 36.9	12.399
6	1 14 39.38	1.9590	2 55 26.9	13.191	6	2 1 30.63	1.9504	8 2 59.5	12.354
7	1 16 36.90	1.9580	3 8 37.6	13.166	7	2 3 27.66	1.9507	8 15 19.4	12.308
8	1 18 34.35	1.9571	3 21 46.8	13.140	8	2 5 24.72	1.9511	8 27 36.5	12.262
9	1 20 31.75	1.9562	3 34 54.4	13.113	9	2 7 21.79	1.9513	8 39 50.8	12.215
10	1 22 29.10	1.9554	3 48 0.4	13.087	10	2 9 18.88	1.9517	8 52 2.3	12.167
11	1 24 26.40	1.9547	4 1 4.8	13.059	11	2 11 16.00	1.9522	9 4 10.9	12.118
12	1 26 23.66	1.9540	4 14 7.5	13.030	12	2 13 13.15	1.9527	9 16 16.5	12.068
13	1 28 20.88	1.9534	4 27 8.4	12.999	13	2 15 10.33	1.9533	9 28 19.1	12.018
14	1 30 18.07	1.9528	4 40 7.4	12.967	14	2 17 7.55	1.9540	9 40 18.7	11.968
15	1 32 15.22	1.9523	4 53 4.5	12.936	15	2 19 4.81	1.9545	9 52 15.3	11.917
16	1 34 12.35	1.9519	5 5 59.7	12.903	16	2 21 2.09	1.9551	10 4 8.7	11.864
17	1 36 9.45	1.9514	5 18 52.9	12.870	17	2 22 59.43	1.9560	10 15 58.9	11.810
18	1 38 6.52	1.9510	5 31 44.1	12.836	18	2 24 56.81	1.9566	10 27 45.9	11.756
19	1 40 3.57	1.9507	5 44 33.2	12.800	19	2 26 54.23	1.9574	10 39 29.6	11.701
20	1 42 0.61	1.9505	5 57 20.1	12.763	20	2 28 51.70	1.9583	10 51 10.0	11.646
21	1 43 57.63	1.9503	6 10 4.8	12.726	21	2 30 49.23	1.9593	11 2 47.1	11.590
22	1 45 54.64	1.9501	6 22 47.2	12.688	22	2 32 46.82	1.9602	11 14 20.8	11.532
23	1 47 51.64	1.9499	6 35 27.3	12.649	23	2 34 44.46	1.9611	11 25 51.0	11.474
24	1 49 48.63	1.9498	N. 6 48 5.1	12.610	24	2 36 42.16	1.9621	N.11 37 17.7	11.416

PHASES OF THE MOON.

		d	h	m
☾	Last Quarter, ...	6	10	9.9
●	New Moon, ...	14	7	9.5
☽	First Quarter, ...	21	5	12.3
○	Full Moon, ...	28	5	44.4

		d	h
☾	Apogee, ...	7	0.8
☾	Perigee, ...	20	7.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	Aldebaran	W.	36° 57′ 52″	3028	38° 27′ 30″	3018	39° 57′ 20″	3009	41° 27′ 21″	3000
	Sun	E.	61 59 54	3392	60 37 28	3384	59 14 53	3377	57 52 10	3368
10	α Arietis	W.	80 16 20	3065	81 45 13	3053	83 14 20	3041	84 43 42	3030
	Aldebaran	W.	49 0 34	2948	50 31 52	2937	52 3 24	2926	53 35 10	2914
	Sun	E.	50 56 1	3321	49 32 14	3312	48 8 16	3302	46 44 7	3291
11	Aldebaran	W.	61 17 43	2855	62 51 0	2842	64 24 33	2830	65 58 22	2818
	Jupiter	W.	15 29 41	2941	17 1 8	2921	18 33 0	2904	20 5 14	2886
	Sun	E.	39 40 17	3239	38 14 54	3229	36 49 19	3219	35 23 32	3209
12	Aldebaran	W.	73 51 34	2753	75 27 4	2741	77 2 50	2728	78 38 53	2714
	Pollux	W.	29 51 59	2796	31 26 30	2779	33 1 25	2763	34 36 42	2747
	Jupiter	W.	27 51 19	2814	29 25 29	2799	30 59 58	2785	32 34 46	2772
	Sun	E.	28 11 54	3169	26 45 8	3163	25 18 15	3158	23 51 16	3156
16	Sun	W.	22 7 49	2819	23 41 52	2799	25 16 21	2781	26 51 14	2764
	Mars	E.	38 10 50	2634	36 32 41	2629	34 54 25	2624	33 16 2	2619
	Antares	E.	53 55 21	2429	52 12 27	2423	50 29 25	2418	48 46 16	2414
	Saturn	E.	78 32 9	2395	76 48 27	2388	75 4 35	2381	73 20 33	2374
	α Aquilæ	E.	100 46 1	3130	99 18 28	3117	97 50 39	3104	96 22 34	3091
17	Sun	W.	34 50 25	2703	36 27 1	2696	38 3 48	2687	39 40 46	2678
	Antares	E.	40 9 15	2402	38 25 43	2401	36 42 10	2403	34 58 39	2404
	Saturn	E.	64 38 5	2345	62 53 11	2341	61 8 11	2336	59 23 4	2331
	α Aquilæ	E.	88 59 9	3056	87 30 5	3052	86 0 57	3051	84 31 47	3051
18	Sun	W.	47 47 54	2649	49 25 42	2645	51 3 36	2640	52 41 36	2637
	Saturn	E.	50 36 0	2313	48 50 20	2311	47 4 37	2309	45 18 50	2307
	α Aquilæ	E.	77 6 33	3073	75 37 51	3082	74 9 20	3094	72 41 3	3107
	Fomalhaut	E.	109 11 0	2511	107 30 2	2504	105 48 54	2497	104 7 37	2492
19	Sun	W.	60 52 42	2622	62 31 6	2621	64 9 32	2620	65 48 0	2618
	Saturn	E.	36 29 12	2298	34 43 10	2298	32 57 7	2297	31 11 3	2297
	α Aquilæ	E.	65 24 27	3305	63 58 24	3332	62 32 53	3362	61 7 57	3396
	Fomalhaut	E.	95 39 37	2474	93 57 47	2472	92 15 55	2470	90 34 0	2470
	α Pegasi	E.	112 21 39	2768	110 46 29	2756	109 11 3	2744	107 35 22	2735
20	Sun	W.	74 0 42	2615	75 39 16	2615	77 17 51	2615	78 56 25	2615
	Mars	W.	15 56 47	2612	17 35 26	2595	19 14 28	2581	20 53 49	2569
	α Aquilæ	E.	54 14 24	3523	52 54 25	3583	51 35 32	3650	50 17 52	3724
	Fomalhaut	E.	82 4 22	2472	80 22 29	2475	78 40 40	2477	76 58 55	2481
	α Pegasi	E.	99 34 16	2704	97 57 41	2700	96 21 1	2698	94 44 18	2695
21	Sun	W.	87 9 6	2626	88 47 34	2628	90 26 0	2630	92 4 24	2632
	Mars	W.	29 13 24	2543	30 53 37	2541	32 33 53	2540	34 14 10	2540
	Antares	W.	17 49 35	2545	19 29 45	2506	21 10 50	2476	22 52 37	2453
	Fomalhaut	E.	68 31 35	2506	66 50 30	2512	65 9 34	2520	63 28 49	2530
	α Pegasi	E.	86 40 32	2701	85 3 53	2704	83 27 19	2708	81 50 50	2713
22	Sun	W.	100 15 46	2635	101 53 53	2638	103 31 57	2640	105 9 57	2643
	Mars	W.	42 35 43	2541	44 15 59	2543	45 56 13	2544	47 36 25	2545
	Antares	W.	31 27 49	2392	33 11 35	2387	34 55 29	2382	36 39 30	2379
	Fomalhaut	E.	55 8 33	2588	53 29 22	2603	51 50 31	2621	50 12 4	2639
	α Pegasi	E.	73 50 35	2754	72 15 6	2765	70 39 52	2778	69 4 55	2792

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L of Diff.	XXIh.	P. L. of Diff.
9	Aldebaran	W.	42° 57′ 34″	2989	44° 28′ 0″	2980	45° 58′ 38″	2969	47° 29′ 29″	2958
	Sun	E.	56 29 17	3359	55 6 14	3350	53 43 0	3341	52 19 36	3332
10	α Arietis	W.	86 13 18	3018	87 43 8	3007	89 13 12	2995	90 43 31	2983
	Aldebaran	W.	55 7 11	2902	56 39 27	2891	58 11 57	2880	59 44 42	2867
	Sun	E.	45 19 45	3281	43 55 11	3270	42 30 25	3260	41 5 27	3250
11	Aldebaran	W.	67 32 27	2805	69 6 49	2792	70 41 27	2779	72 16 22	2766
	Jupiter	W.	21 37 48	2873	23 10 42	2858	24 43 55	2843	26 17 27	2828
	Sun	E.	33 57 33	3199	32 31 23	3191	31 5 3	3183	29 38 33	3175
12	Aldebaran	W.	80 15 14	2701	81 51 52	2689	83 28 47	2675	85 6 0	2663
	Pollux	W.	36 12 20	2731	37 48 19	2715	39 24 39	2699	41 1 20	2685
	Jupiter	W.	34 9 51	2757	35 45 15	2744	37 20 56	2730	38 56 56	2717
	Sun	E.	22 24 14	3156	20 57 12	3162	19 30 17	3171	18 3 33	3188
16	Sun	W.	28 26 29	2749	30 2 4	2736	31 37 56	2725	33 14 3	2713
	Mars	E.	31 37 33	2615	29 58 58	2612	28 20 20	2611	26 41 40	2610
	Antares	E.	47 3 1	2410	45 19 40	2407	43 36 15	2404	41 52 46	2403
	Saturn	E.	71 36 21	2368	69 52 0	2362	68 7 30	2355	66 22 51	2350
	α Aquilæ	E.	94 54 14	3081	93 25 41	3073	91 56 58	3066	90 28 7	3060
17	Sun	W.	41 17 55	2672	42 55 13	2666	44 32 39	2660	46 10 13	2655
	Antares	E.	33 15 10	2408	31 31 47	2414	29 48 32	2421	28 5 27	2431
	Saturn	E.	57 37 50	2327	55 52 30	2324	54 7 5	2320	52 21 35	2317
	α Aquilæ	E.	83 2 37	3052	81 33 29	3055	80 4 24	3060	78 35 25	3065
18	Sun	W.	54 19 41	2633	55 57 51	2630	57 36 5	2628	59 14 22	2626
	Saturn	E.	43 33 0	2304	41 47 7	2302	40 1 11	2300	38 15 12	2300
	α Aquilæ	E.	71 13 2	3123	69 45 20	3139	68 17 58	3158	66 50 59	3181
	Fomalhaut	E.	102 26 13	2487	100 44 42	2483	99 3 5	2480	97 21 23	2477
19	Sun	W.	67 26 30	2617	69 5 2	2616	70 43 35	2616	72 22 8	2615
	Saturn	E.	29 24 59	2296	27 38 54	2297	25 52 50	2298	24 6 47	2298
	α Aquilæ	E.	59 43 41	3333	58 20 8	3373	56 57 21	3418	55 35 25	3467
	Fomalhaut	E.	88 52 4	2469	87 10 7	2470	85 28 11	2470	83 46 16	2471
	α Pegasi	E.	105 59 29	2726	104 23 24	2719	102 47 9	2713	101 10 46	2707
20	Sun	W.	80 34 59	2616	82 13 32	2617	83 52 4	2617	85 30 36	2618
	Mars	W.	22 33 26	2561	24 13 15	2555	25 53 12	2551	27 33 15	2546
	α Aquilæ	E.	49 1 30	3805	47 46 33	3895	46 33 8	3995	45 21 23	4105
	Fomalhaut	E.	75 17 15	2485	73 35 40	2489	71 54 11	2494	70 12 49	2499
	α Pegasi	E.	93 7 32	2695	91 30 45	2695	89 53 59	2696	88 17 14	2698
21	Sun	W.	93 42 46	2626	95 21 6	2629	96 59 22	2631	98 37 35	2632
	Mars	W.	35 54 28	2539	37 34 47	2539	39 15 6	2539	40 55 25	2540
	Antares	W.	24 34 57	2434	26 17 43	2419	28 0 50	2408	29 44 13	2399
	Fomalhaut	E.	61 48 17	2539	60 7 58	2549	58 27 53	2561	56 48 4	2574
	α Pegasi	E.	80 14 28	2719	78 38 14	2727	77 2 10	2735	75 26 17	2744
22	Sun	W.	106 47 53	2647	108 25 44	2650	110 3 31	2653	111 41 14	2657
	Mars	W.	49 16 35	2548	50 56 42	2550	52 36 46	2552	54 16 47	2555
	Antares	W.	38 23 35	2376	40 7 44	2375	41 51 55	2374	43 36 7	2373
	Fomalhaut	E.	48 34 2	2660	46 56 29	2683	45 19 26	2710	43 42 59	2738
	α Pegasi	E.	67 30 16	2806	65 55 56	2822	64 21 57	2841	62 48 22	2861

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Sun	W.	113° 18′ 51″	2661	114° 56′ 23″	2666	116° 33′ 49″	2669	118° 11′ 10″	2674
	Mars	W.	55 56 44	2558	57 36 37	2561	59 16 26	2564	60 56 10	2568
	Antares	W.	45 20 20	2373	47 4 33	2374	48 48 45	2375	50 32 56	2377
	Saturn	W.	20 3 42	2342	21 48 41	2344	23 33 36	2347	25 18 27	2350
	Fomalhaut	E.	42 7 10	2770	40 32 3	2806	38 57 43	2848	37 24 17	2895
	α Pegasi	E.	61 15 13	2882	59 42 31	2905	58 10 19	2931	56 38 40	2960
24	Sun	W.	126 16 16	2700	127 52 56	2707	129 29 27	2713	131 5 50	2719
	Mars	W.	69 13 36	2588	70 52 48	2592	72 31 54	2597	74 10 53	2602
	Antares	W.	59 13 3	2389	60 56 53	2393	62 40 38	2397	64 24 17	2401
	Saturn	W.	34 1 33	2368	35 45 53	2373	37 30 7	2378	39 14 14	2382
	α Pegasi	E.	49 10 26	3148	47 43 15	3198	46 17 3	3253	44 51 56	3313
	α Arietis	E.	89 8 35	2485	87 27 0	2489	85 45 31	2494	84 4 10	2500
25	Mars	W.	82 23 59	2630	84 2 13	2637	85 40 18	2643	87 18 15	2650
	Antares	W.	73 1 0	2425	74 43 59	2431	76 26 50	2436	78 9 34	2442
	Saturn	W.	47 53 1	2409	49 36 23	2415	51 19 36	2422	53 2 40	2428
	α Pegasi	E.	38 6 36	3744	36 50 35	3864	35 36 39	4001	34 25 0	4157
	α Arietis	E.	75 39 36	2535	73 59 11	2543	72 18 58	2552	70 38 57	2561
	Aldebaran	E.	106 14 7	2409	104 30 45	2415	102 47 32	2422	101 4 28	2428
26	Mars	W.	95 25 32	2687	97 2 29	2695	98 39 15	2704	100 15 50	2713
	Antares	W.	86 40 52	2477	88 22 38	2485	90 4 13	2492	91 45 37	2500
	Saturn	W.	61 35 37	2464	63 17 41	2472	64 59 34	2480	66 41 16	2487
	α Aquilæ	W.	47 48 39	3972	49 0 46	3901	50 14 5	3838	51 28 28	3783
	α Arietis	E.	62 22 25	2618	60 43 55	2632	59 5 43	2645	57 27 49	2660
	Aldebaran	E.	92 31 28	2463	90 49 23	2470	89 7 28	2479	87 25 45	2487
27	Saturn	W.	75 6 48	2532	76 47 17	2541	78 27 33	2551	80 7 35	2561
	α Aquilæ	W.	57 53 1	3584	59 11 53	3555	60 31 16	3532	61 51 5	3511
	α Arietis	E.	49 23 50	2750	47 48 17	2772	46 13 13	2795	44 38 39	2821
	Aldebaran	E.	79 0 6	2531	77 19 36	2540	75 39 19	2550	73 59 15	2560
28	Saturn	W.	88 24 21	2612	90 2 59	2624	91 41 22	2635	93 19 30	2645
	α Aquilæ	W.	68 34 59	3445	69 56 25	3438	71 17 59	3433	72 39 38	3430
	Fomalhaut	W.	33 12 34	3253	34 37 41	3210	36 3 38	3175	37 30 17	3148
	α Arietis	E.	36 55 1	2985	35 24 30	3028	33 54 52	3075	32 26 12	3130
	Aldebaran	E.	65 42 29	2613	64 3 52	2624	62 25 30	2635	60 47 22	2646
	Jupiter	E.	114 8 49	2651	112 31 3	2661	110 53 31	2672	109 16 14	2684
29	Saturn	W.	101 26 26	2702	103 3 3	2713	104 39 25	2725	106 15 31	2737
	α Aquilæ	W.	79 28 17	3434	80 49 55	3439	82 11 27	3446	83 32 52	3453
	Fomalhaut	W.	44 50 26	3063	46 19 21	3055	47 48 26	3049	49 17 38	3044
	α Pegasi	W.	33 20 46	4422	34 25 47	4293	35 32 46	4183	36 41 28	4086
	Aldebaran	E.	52 40 40	2706	51 4 8	2719	49 27 53	2732	47 51 55	2744
	Pollux	E.	96 49 46	2702	95 13 9	2713	93 36 47	2725	92 0 41	2737
	Jupiter	E.	101 13 31	2740	99 37 44	2751	98 2 12	2763	96 26 55	2774
30	α Aquilæ	W.	90 17 35	3503	91 37 56	3515	92 58 3	3530	94 17 54	3544
	Fomalhaut	W.	56 44 25	3043	58 13 45	3046	59 43 1	3050	61 12 12	3053
	α Pegasi	W.	42 45 0	3760	44 0 44	3716	45 17 14	3679	46 34 23	3646
	Aldebaran	E.	39 56 13	2808	38 21 56	2822	36 47 57	2836	35 14 16	2849
	Pollux	E.	84 4 0	2795	82 29 26	2807	80 55 7	2818	79 21 3	2830
	Jupiter	E.	88 34 19	2832	87 0 33	2845	85 27 3	2856	83 53 48	2867

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	Sun	W.	119° 48′ 25″	2679	121° 25′ 33″	2684	123° 2′ 35″	2689	124° 39′ 29″	2695
	Mars	W.	62 35 49	2571	64 15 24	2574	65 54 54	2579	67 34 18	2583
	Antares	W.	52 17 4	2379	54 1 9	2381	55 45 11	2384	57 29 9	2387
	Saturn	W.	27 3 14	2353	28 47 57	2356	30 32 35	2360	32 17 7	2364
	Fomalhaut	E.	35 51 52	2949	34 20 35	3009	32 50 33	3079	31 21 58	3166
	α Pegasi	E.	55 7 37	2991	53 37 13	3024	52 7 30	3060	50 38 32	3103
24	Sun	W.	132 42 4	2726	134 18 9	2734	135 54 4	2742	137 29 48	2750
	Mars	W.	75 49 45	2607	77 28 30	2613	79 7 7	2618	80 45 37	2624
	Antares	W.	66 7 51	2405	67 51 19	2410	69 34 40	2415	71 17 53	2419
	Saturn	W.	40 58 15	2387	42 42 8	2393	44 25 53	2398	46 9 31	2403
	α Pegasi	E.	43 28 0	3381	42 5 22	3457	40 44 10	3541	39 24 31	3636
	α Arietis	E.	82 22 57	2506	80 41 52	2512	79 0 56	2520	77 20 11	2527
25	Mars	W	88 56 2	2657	90 33 39	2664	92 11 7	2672	93 48 25	2680
	Antares	W.	79 52 9	2448	81 34 35	2455	83 16 51	2463	84 58 56	2470
	Saturn	W.	54 45 35	2435	56 28 20	2441	58 10 56	2448	59 53 22	2456
	α Pegasi	E.	33 15 53	4335	32 9 33	4544	31 6 16	4776	30 6 20	5050
	α Arietis	E.	68 59 9	2572	67 19 36	2583	65 40 17	2593	64 1 13	2605
	Aldebaran	E.	99 21 33	2434	97 38 47	2441	95 56 10	2448	94 13 44	2455
26	Mars	W.	101 52 13	2722	103 28 23	2732	105 4 21	2741	106 40 7	2750
	Antares	W.	93 26 50	2509	95 7 51	2518	96 48 39	2527	98 29 15	2538
	Saturn	W.	68 22 47	2496	70 4 6	2504	71 45 13	2514	73 26 7	2523
	α Aquilæ	W.	52 43 48	3733	54 0 0	3688	55 17 0	3649	56 34 42	3614
	α Arietis	E.	55 50 16	2676	54 13 4	2692	52 36 14	2711	50 59 49	2731
	Aldebaran	E.	85 44 13	2495	84 2 53	2504	82 21 45	2512	80 40 49	2522
27	Saturn	W.	81 47 24	2571	83 26 59	2581	85 6 20	2591	86 45 28	2601
	α Aquilæ	W.	63 11 17	3493	64 31 49	3477	65 52 39	3464	67 13 43	3454
	α Arietis	E.	43 4 39	2848	41 31 14	2878	39 58 27	2911	38 26 22	2946
	Aldebaran	E.	72 19 25	2571	70 39 50	2580	69 0 28	2591	67 21 21	2602
28	Saturn	W.	94 57 24	2656	96 35 3	2668	98 12 26	2679	99 49 34	2691
	α Aquilæ	W.	74 1 21	3428	75 23 6	3428	76 44 51	3429	78 6 35	3431
	Fomalhaut	W.	38 57 29	2123	40 25 11	3102	41 53 18	3087	43 21 44	3073
	α Arietis	E.	30 58 39	3191	29 32 19	3260	28 7 21	3338	26 43 54	3430
	Aldebaran	E.	59 9 30	2658	57 31 54	2669	55 54 33	2681	54 17 28	2694
	Jupiter	E.	107 39 12	2695	106 2 25	2705	104 25 52	2716	102 49 34	2729
29	Saturn	W.	107 51 22	2749	109 26 57	2760	111 2 17	2772	112 37 21	2785
	α Aquilæ	W.	84 54 9	3461	86 15 17	3470	87 36 15	3480	88 57 1	3491
	Fomalhaut	W.	50 46 56	3041	52 16 18	3040	53 45 41	3041	55 15 3	3041
	α Pegasi	W.	37 51 43	4002	39 3 21	3929	40 16 11	3864	41 30 7	3809
	Aldebaran	E.	46 16 13	2756	44 40 47	2769	43 5 38	2782	41 30 47	2795
	Pollux	E.	90 24 50	2748	88 49 14	2760	87 13 54	2772	85 38 49	2784
	Jupiter	E.	94 51 53	2786	93 17 7	2798	91 42 36	2809	90 8 20	2821
30	α Aquilæ	W.	95 37 30	3559	96 56 49	3576	98 15 50	3593	99 34 32	3610
	Fomalhaut	W.	62 41 19	3058	64 10 20	3064	65 39 14	3069	67 8 2	3075
	α Pegasi	W.	47 52 8	3618	49 10 23	3593	50 29 5	3570	51 48 12	3551
	Aldebaran	E.	33 40 52	2864	32 7 47	2879	30 35 1	2894	29 2 34	2909
	Pollux	E.	77 47 14	2842	76 13 40	2853	74 40 21	2865	73 7 17	2876
	Jupiter	E.	82 20 47	2879	80 48 1	2890	79 15 29	2901	77 43 12	2912

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	THE SUN'S Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sun.	1	12 28 49.99	9.051	S. 3 6 59.1	–58.27	16 1.47	64.35	10 14.86	0.803
Mon.	2	12 32 27.39	9.064	3 30 16.7	58.18	16 1.74	64.40	10 33.96	0.790
Tues.	3	12 36 5.11	9.078	3 53 32.0	58.09	16 2.02	64.45	10 52.74	0.776
Wed.	4	12 39 43.18	9.093	4 16 44.7	57.97	16 2.29	64.51	11 11.17	0.760
Thur.	5	12 43 21.60	9.109	4 39 54.4	57.83	16 2.56	64.57	11 29.25	0.745
Frid.	6	12 47 0.40	9.125	5 3 0.7	57.68	16 2.83	64.63	11 46.95	0.729
Sat.	7	12 50 39.60	9.142	5 26 3.3	57.53	16 3.10	64.69	12 4.26	0.712
Sun.	8	12 54 19.22	9.160	5 49 1.9	57.35	16 3.37	64.75	12 21.15	0.694
Mon.	9	12 57 59.28	9.179	6 11 56.1	57.16	16 3.64	64.82	12 37.59	0.675
Tues.	10	13 1 39.82	9.199	6 34 45.5	56.96	16 3.91	64.88	12 53.57	0.655
Wed.	11	13 5 20.84	9.219	6 57 29.9	56.73	16 4.19	64.95	13 9.06	0.635
Thur.	12	13 9 2.35	9.239	7 20 8.6	56.48	16 4.46	65.02	13 24.06	0.615
Frid.	13	13 12 44.36	9.261	7 42 41.4	56.22	16 4.74	65.08	13 38.56	0.593
Sat.	14	13 16 26.89	9.283	8 5 8.0	55.95	16 5.01	65.16	13 52.54	0.571
Sun.	15	13 20 9.97	9.305	8 27 27.8	55.66	16 5.29	65.24	14 5.98	0.549
Mon.	16	13 23 53.60	9.329	8 49 40.4	55.37	16 5.57	65.32	14 18.87	0.525
Tues.	17	13 27 37.79	9.354	9 11 45.4	55.05	16 5.85	65.41	14 31.20	0.501
Wed.	18	13 31 22.56	9.379	9 33 42.3	54.70	16 6.13	65.50	14 42.95	0.476
Thur.	19	13 35 7.93	9.404	9 55 30.9	54.34	16 6.40	65.59	14 54.10	0.451
Frid.	20	13 38 53.92	9.429	10 17 10.6	53.97	16 6.68	65.68	15 4.64	0.426
Sat.	21	13 42 40.54	9.455	10 38 41.3	53.58	16 6.95	65.78	15 14.56	0.400
Sun.	22	13 46 27.79	9.482	11 0 2.5	53.17	16 7.23	65.87	15 23.84	0.373
Mon.	23	13 50 15.70	9.510	11 21 13.6	52.74	16 7.50	65.97	15 32.46	0.345
Tues.	24	13 54 4.27	9.539	11 42 14.2	52.31	16 7.77	66.07	15 40.41	0.316
Wed.	25	13 57 53.54	9.568	12 3 4.2	51.85	16 8.04	66.17	15 47.68	0.287
Thur.	26	14 1 43.53	9.597	12 23 42.9	51.37	16 8.30	66.27	15 54.24	0.258
Frid.	27	14 5 34.24	9.628	12 44 10.1	50.89	16 8.56	66.38	16 0.07	0.227
Sat.	28	14 9 25.69	9.659	13 4 25.4	50.38	16 8.82	66.49	16 5.16	0.196
Sun.	29	14 13 17.88	9.691	13 24 28.5	49.86	16 9.08	66.60	16 9.51	0.164
Mon.	30	14 17 10.84	9.723	13 44 18.8	49.32	16 9.34	66.71	16 13.09	0.132
Tues.	31	14 21 4.59	9.756	14 3 56.1	48.76	16 9.59	66.82	16 15.88	0.099
Wed.	32	14 24 59.15	9.790	S.14 23 19.8	–48.19	16 9.83	66.93	16 17.88	0.065

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time, or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Sun.	1	12 28 51.55	9.053	S. 3 7 9.2	−58.28	10 14.99	0.803	12 39 6.54
Mon.	2	12 32 29.00	9.066	3 30 27.0	58.19	10 34.09	0.790	12 43 3.09
Tues.	3	12 36 6.77	9.081	3 53 42.5	58.10	10 52.88	0.776	12 46 59.65
Wed.	4	12 39 44.89	9.096	4 16 55.5	57.98	11 11.31	0.760	12 50 56.20
Thur.	5	12 43 23.36	9.111	4 40 5.5	57.84	11 29.39	0.745	12 54 52.75
Frid.	6	12 47 2.21	9.127	5 3 12.1	57.69	11 47.09	0.729	12 58 49.30
Sat.	7	12 50 41.45	9.144	5 26 14.9	57.54	12 4.40	0.712	13 2 45.85
Sun.	8	12 54 21.12	9.162	5 49 13.7	57.36	12 21.29	0.694	13 6 42.41
Mon.	9	12 58 1.23	9.181	6 12 8.2	57.17	12 37.73	0.675	13 10 38.96
Tues.	10	13 1 41.81	9.201	6 34 57.8	56.97	12 53.71	0.655	13 14 35.52
Wed.	11	13 5 22.87	9.221	6 57 42.4	56.74	13 9.20	0.635	13 18 32.07
Thur.	12	13 9 4.42	9.241	7 20 21.3	56.49	13 24.20	0.615	13 22 28.62
Frid.	13	13 12 46.47	9.263	7 42 54.3	56.23	13 38.71	0.593	13 26 25.18
Sat.	14	13 16 29.05	9.285	8 5 21.0	55.96	13 52.68	0.571	13 30 21.73
Sun.	15	13 20 12.17	9.307	8 27 40.9	55.67	14 6.11	0.549	13 34 18.28
Mon.	16	13 23 55.84	9.331	8 49 53.6	55.37	14 19.00	0.525	13 38 14.84
Tues.	17	13 27 40.06	9.355	9 11 58.7	55.05	14 31.33	0.501	13 42 11.39
Wed.	18	13 31 24.87	9.380	9 33 55.7	54.70	14 43.08	0.476	13 46 7.95
Thur.	19	13 35 10.28	9.405	9 55 44.4	54.34	14 54.22	0.451	13 50 4.50
Frid.	20	13 38 56.30	9.430	10 17 24.2	53.97	15 4.75	0.426	13 54 1.05
Sat.	21	13 42 42.95	9.456	10 38 55.0	53.58	15 14.66	0.400	13 57 57.61
Sun.	22	13 46 30.23	9.483	11 0 16.2	53.17	15 23.93	0.373	14 1 54.16
Mon.	23	13 50 18.17	9.511	11 21 27.3	52.74	15 32.54	0.345	14 5 50.71
Tues.	24	13 54 6.77	9.540	11 42 27.9	52.31	15 40.49	0.316	14 9 47.26
Wed.	25	13 57 56.07	9.569	12 3 17.8	51.85	15 47.75	0.287	14 13 43.82
Thur.	26	14 1 46.08	9.598	12 23 56.5	51.37	15 54.30	0.258	14 17 40.38
Frid.	27	14 5 36.81	9.629	12 44 23.6	50.89	16 0.12	0.227	14 21 36.93
Sat.	28	14 9 28.28	9.660	13 4 38.9	50.38	16 5.21	0.196	14 25 33.49
Sun.	29	14 13 20.49	9.692	13 24 41.9	49.86	16 9.55	0.164	14 29 30.04
Mon.	30	14 17 13.47	9.724	13 44 32.1	49.32	16 13.12	0.132	14 33 26.59
Tues.	31	14 21 7.24	9.757	14 4 9.2	48.76	16 15.91	0.099	14 37 23.15
Wed.	32	14 25 1.81	9.791	S. 14 23 32.9	−48.19	16 17.90	0.065	14 41 19.71

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour +9ˢ.8565

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S							Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.		
		True LONGITUDE.					Diff. for 1 hour.	LATITUDE.					
		λ			λ								
		°	′	″	′	″	″	″			h	m	s
1	274	187	51	45.1	51	25.0	147.61	−0.26	0.0002374	−51.5	11	19	1.90
2	275	188	50	48.8	50	28.6	147.70	0.15	0.0001140	51.4	11	15	6.00
3	276	189	49	54.6	49	34.3	147.79	−0.03	9.9999910	51.2	11	11	10.10
4	277	190	49	2.6	48	42.2	147.89	+0.10	.9998683	51.1	11	7	14.19
5	278	191	48	12.9	47	52.4	147.98	0.23	.9997457	51.0	11	3	18.28
6	279	192	47	25.6	47	5.0	148.08	0.37	.9996233	51.0	10	59	22.37
7	280	193	46	40.7	46	20.0	148.17	0.50	.9995010	51.0	10	55	26.47
8	281	194	45	58.1	45	37.3	148.27	0.61	.9993786	51.0	10	51	30.56
9	282	195	45	17.8	44	56.9	148.37	0.69	.9992561	51.1	10	47	34.65
10	283	196	44	39.7	44	18.7	148.47	0.75	.9991334	51.2	10	43	38.75
11	284	197	44	3.9	43	42.8	148.56	0.78	.9990105	51.3	10	39	42.85
12	285	198	43	30.3	43	9.1	148.65	0.78	.9988873	51.4	10	35	46.94
13	286	199	42	58.8	42	37.5	148.73	0.74	.9987638	51.5	10	31	51.03
14	287	200	42	29.4	42	8.0	148.82	0.68	.9986399	51.6	10	27	55.12
15	288	201	42	2.1	41	40.6	148.90	0.60	.9985157	51.8	10	23	59.22
16	289	202	41	36.8	41	15.2	148.98	0.50	.9983912	51.9	10	20	3.31
17	290	203	41	13.4	40	51.6	149.06	0.38	.9982666	51.9	10	16	7.40
18	291	204	40	51.7	40	29.8	149.14	0.25	.9981422	51.8	10	12	11.49
19	292	205	40	31.8	40	9.8	149.21	+0.12	.9980179	51.7	10	8	15.59
20	293	206	40	13.6	39	51.5	149.28	−0.01	.9978939	51.5	10	4	19.68
21	294	207	39	57.1	39	34.9	149.34	0.13	.9977704	51.3	10	0	23.77
22	295	208	39	42.3	39	20.0	149.41	0.23	.9976475	51.1	9	56	27.86
23	296	209	39	29.2	39	6.8	149.49	0.31	.9975252	50.8	9	52	31.96
24	297	210	39	17.7	38	55.2	149.57	0.35	.9974038	50.4	9	48	36.05
25	298	211	39	8.0	38	45.4	149.64	0.36	.9972835	49.9	9	44	40.14
26	299	212	39	0.2	38	37.5	149.72	0.34	.9971644	49.3	9	40	44.23
27	300	213	38	54.2	38	31.3	149.79	0.29	.9970467	48.7	9	36	48.31
28	301	214	38	50.0	38	27.0	149.88	0.22	.9969304	48.1	9	32	52.40
29	302	215	38	47.6	38	24.5	149.94	0.13	.9968155	47.5	9	28	56.49
30	303	216	38	47.1	38	23.9	150.03	−0.01	.9967021	46.9	9	25	0.58
31	304	217	38	48.7	38	25.3	150.11	+0.12	.9965902	46.3	9	21	4.68
32	305	218	38	52.3	38	28.8	150.20	+0.26	9.9964797	−45.7	9	17	8.77

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour
−9^{s}.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 6.2	15 2.2	55 19.0	−1.26	55 4.4	−1.16	14 23.6	1.87	16.7
2	14 58.6	14 55.5	54 51.2	1.03	54 39.7	0.89	15 9.1	1.92	17.7
3	14 52.8	14 50.8	54 30.0	0.72	54 22.4	0.54	15 55.9	1.98	18.7
4	14 49.3	14 48.5	54 17.0	−0.35	54 14.0	−0.15	16 44.1	2.04	19.7
5	14 48.3	14 48.9	54 13.5	+0.06	54 15.6	+0.28	17 33.5	2.07	20.7
6	14 50.2	14 52.1	54 20.2	0.50	54 27.5	0.71	18 23.4	2.08	21.7
7	14 54.8	14 58.2	54 37.3	0.92	54 49.6	1.13	19 13.4	2.07	22.7
8	15 2.2	15 6.7	55 4.3	1.32	55 21.1	1.49	20 2.9	2.03	23.7
9	15 11.9	15 17.5	55 40.0	1.65	56 0.5	1.78	20 51.6	2.00	24.7
10	15 23.5	15 29.7	56 22.5	1.88	56 45.4	1.94	21 39.7	1.99	25.7
11	15 36.1	15 42.6	57 9.0	1.97	57 32.6	1.96	22 27.3	1.99	26.7
12	15 48.9	15 55.0	57 55.9	1.91	58 18.4	1.82	23 15.4	2.02	27.7
13	16 0.8	16 6.0	58 39.5	1.69	58 58.9	1.52			28.7
14	16 10.7	16 14.7	59 16.0	1.32	59 30.5	1.09	0 4.6	2.09	0.2
15	16 17.8	16 20.2	59 42.2	0.85	59 50.8	0.59	0 55.8	2.19	1.2
16	16 21.7	16 22.4	59 56.4	+0.33	59 58.9	+0.08	1 49.9	2.33	2.2
17	16 22.3	16 21.4	59 58.5	−0.15	59 55.3	−0.37	2 47.2	2.45	3.2
18	16 19.9	16 17.7	59 49.6	0.57	59 41.8	0.73	3 47.1	2.54	4.2
19	16 15.1	16 12.0	59 32.1	0.87	59 20.9	0.99	4 48.3	2.55	5.2
20	16 8.7	16 5.0	59 8.5	1.07	58 55.2	1.14	5 48.9	2.48	6.2
21	16 1.2	15 57.3	58 41.2	1.18	58 26.8	1.21	6 47.0	2.35	7.2
22	15 53.3	15 49.3	58 12.2	1.23	57 57.3	1.24	7 41.6	2.20	8.2
23	15 45.2	15 41.2	57 42.4	1.24	57 27.5	1.24	8 32.6	2.05	9.2
24	15 37.1	15 33.0	57 12.5	1.24	56 57.7	1.24	9 20.4	1.94	10.2
25	15 29.0	15 25.0	56 42.8	1.23	56 28.2	1.22	10 5.9	1.86	11.2
26	15 21.1	15 17.2	56 13.6	1.20	55 59.3	1.18	10 50.1	1.82	12.2
27	15 13.3	15 9.6	55 45.2	1.16	55 31.6	1.12	11 33.8	1.82	13.2
28	15 6.0	15 2.6	55 18.4	1.08	55 5.8	1.02	12 17.8	1.85	14.2
29	14 59.4	14 56.4	54 53.9	0.95	54 43.0	0.87	13 2.9	1.90	15.2
30	14 53.7	14 51.3	54 33.2	0.77	54 24.5	0.66	13 49.3	1.97	16.2
31	14 49.4	14 47.9	54 17.4	0.53	54 11.8	0.39	14 37.2	2.03	17.2
32	14 46.9	14 46.4	54 8.1	−0.23	54 6.4	−0.06	15 26.2	2.06	18.2

GREENWICH MEAN TIME

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 36 42.16	1.9621	N.11 37 17.7	11.416
1	2 38 39.92	1.9632	11 48 40.9	11.357
2	2 40 37.74	1.9644	12 0 0.5	11.297
3	2 42 35.64	1.9655	12 11 16.5	11.236
4	2 44 33.60	1.9666	12 22 28.8	11.174
5	2 46 31.63	1.9678	12 33 37.4	11.112
6	2 48 29.73	1.9690	12 44 42.3	11.050
7	2 50 27.91	1.9703	12 55 43.4	10.986
8	2 52 26.16	1.9716	13 6 40.6	10.922
9	2 54 24.50	1.9730	13 17 34.0	10.857
10	2 56 22.92	1.9743	13 28 23.5	10.791
11	2 58 21.42	1.9757	13 39 9.0	10.724
12	3 0 20.01	1.9772	13 49 50.4	10.657
13	3 2 18.69	1.9787	14 0 27.8	10.589
14	3 4 17.45	1.9801	14 11 1.1	10.521
15	3 6 16.31	1.9817	14 21 30.3	10.452
16	3 8 15.26	1.9832	14 31 55.4	10.383
17	3 10 14.30	1.9848	14 42 16.3	10.313
18	3 12 13.44	1.9865	14 52 32.9	10.241
19	3 14 12.68	1.9881	15 2 45.2	10.169
20	3 16 12.02	1.9899	15 12 53.2	10.097
21	3 18 11.46	1.9916	15 22 56.9	10.025
22	3 20 11.01	1.9934	15 32 56.2	9.951
23	3 22 10.66	1.9951	N.15 42 51.0	9.875

MONDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 24 10.42	1.9968	N.15 52 41.2	9.799
1	3 26 10.28	1.9987	16 2 26.9	9.724
2	3 28 10.26	2.0006	16 12 8.1	9.649
3	3 30 10.35	2.0024	16 21 44.8	9.573
4	3 32 10.55	2.0043	16 31 16.9	9.495
5	3 34 10.87	2.0062	16 40 44.2	9.416
6	3 36 11.30	2.0081	16 50 6.8	9.337
7	3 38 11.85	2.0100	16 59 24.6	9.258
8	3 40 12.51	2.0120	17 8 37.7	9.178
9	3 42 13.30	2.0141	17 17 46.0	9.097
10	3 44 14.21	2.0161	17 26 49.4	9.016
11	3 46 15.23	2.0181	17 35 47.9	8.933
12	3 48 16.38	2.0202	17 44 41.4	8.851
13	3 50 17.65	2.0222	17 53 30.0	8.768
14	3 52 19.04	2.0243	18 2 13.6	8.685
15	3 54 20.56	2.0264	18 10 52.2	8.601
16	3 56 22.21	2.0286	18 19 25.7	8.515
17	3 58 23.99	2.0306	18 27 54.0	8.429
18	4 0 25.89	2.0327	18 36 17.2	8.343
19	4 2 27.92	2.0349	18 44 35.2	8.257
20	4 4 30.08	2.0370	18 52 48.0	8.170
21	4 6 32.36	2.0393	19 0 55.6	8.082
22	4 8 34.79	2.0415	19 8 57.9	7.994
23	4 10 37.34	2.0436	19 16 54.9	7.906
24	4 12 40.02	2.0459	N.19 24 46.6	7.817

TUESDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 12 40.02	2.0459	N.19 24 46.6	7.817
1	4 14 42.84	2.0480	19 32 32.9	7.726
2	4 16 45.78	2.0503	19 40 13.7	7.635
3	4 18 48.87	2.0526	19 47 49.1	7.544
4	4 20 52.09	2.0547	19 55 19.0	7.452
5	4 22 55.44	2.0569	20 2 43.4	7.360
6	4 24 58.92	2.0591	20 10 2.2	7.268
7	4 27 2.54	2.0614	20 17 15.5	7.175
8	4 29 6.29	2.0636	20 24 23.2	7.081
9	4 31 10.17	2.0659	20 31 25.2	6.986
10	4 33 14.19	2.0681	20 38 21.5	6.891
11	4 35 18.34	2.0704	20 45 12.1	6.797
12	4 37 22.63	2.0726	20 51 57.1	6.702
13	4 39 27.05	2.0747	20 58 36.3	6.605
14	4 41 31.60	2.0770	21 5 9.7	6.507
15	4 43 36.29	2.0792	21 11 37.2	6.409
16	4 45 41.11	2.0814	21 17 58.8	6.312
17	4 47 46.06	2.0836	21 24 14.6	6.214
18	4 49 51.14	2.0856	21 30 24.5	6.115
19	4 51 56.34	2.0879	21 36 28.4	6.015
20	4 54 1.69	2.0903	21 42 26.3	5.916
21	4 56 7.17	2.0924	21 48 18.3	5.817
22	4 58 12.77	2.0945	21 54 4.3	5.716
23	5 0 18.51	2.0967	N.21 59 44.2	5.613

WEDNESDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 2 24.38	2.0989	N.22 5 17.9	5.511
1	5 4 30.38	2.1010	22 10 45.5	5.409
2	5 6 36.50	2.1031	22 16 7.0	5.306
3	5 8 42.75	2.1051	22 21 22.5	5.206
4	5 10 49.12	2.1072	22 26 31.8	5.102
5	5 12 55.62	2.1093	22 31 34.8	4.997
6	5 15 2.24	2.1113	22 36 31.5	4.892
7	5 17 8.98	2.1134	22 41 21.9	4.787
8	5 19 15.85	2.1155	22 46 6.0	4.682
9	5 21 22.84	2.1175	22 50 43.8	4.577
10	5 23 29.95	2.1194	22 55 15.3	4.472
11	5 25 37.17	2.1214	22 59 40.5	4.367
12	5 27 44.51	2.1233	23 3 59.3	4.260
13	5 29 51.97	2.1253	23 8 11.7	4.152
14	5 31 59.54	2.1271	23 12 17.6	4.044
15	5 34 7.22	2.1290	23 16 17.0	3.937
16	5 36 15.02	2.1308	23 20 10.0	3.829
17	5 38 22.92	2.1326	23 23 56.5	3.721
18	5 40 30.94	2.1344	23 27 36.5	3.612
19	5 42 39.06	2.1361	23 31 9.9	3.502
20	5 44 47.28	2.1379	23 34 36.8	3.393
21	5 46 55.61	2.1397	23 37 57.1	3.283
22	5 49 4.04	2.1414	23 41 10.8	3.173
23	5 51 12.58	2.1431	23 44 17.9	3.062
24	5 53 21.21	2.1447	N.23 47 18.3	2.951

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 53 21.21	2.1447	N.23 47 18.3	2.952
1	5 55 29.94	2.1464	23 50 12.1	2.841
2	5 57 38.77	2.1479	23 52 59.2	2.729
3	5 59 47.69	2.1494	23 55 39.6	2.617
4	6 1 56.70	2.1508	23 58 13.2	2.504
5	6 4 5.79	2.1523	24 0 40.1	2.393
6	6 6 14.98	2.1537	24 3 0.3	2.281
7	6 8 24.24	2.1551	24 5 13.8	2.168
8	6 10 33.60	2.1566	24 7 20.5	2.054
9	6 12 43.03	2.1579	24 9 20.3	1.940
10	6 14 52.55	2.1592	24 11 13.3	1.827
11	6 17 2.14	2.1605	24 12 59.5	1.713
12	6 19 11.81	2.1617	24 14 38.8	1.598
13	6 21 21.55	2.1630	24 16 11.3	1.484
14	6 23 31.37	2.1643	24 17 36.9	1.370
15	6 25 41.26	2.1653	24 18 55.7	1.256
16	6 27 51.20	2.1663	24 20 7.6	1.141
17	6 30 1.21	2.1674	24 21 12.6	1.025
18	6 32 11.29	2.1685	24 22 10.6	0.909
19	6 34 21.43	2.1694	24 23 1.7	0.794
20	6 36 31.62	2.1703	24 23 45.9	0.678
21	6 38 41.86	2.1712	24 24 23.1	0.562
22	6 40 52.16	2.1721	24 24 53.4	0.447
23	6 43 2.51	2.1729	N.24 25 16.7	0.331

FRIDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 45 12.91	2.1737	N.24 25 33.1	0.215
1	6 47 23.35	2.1744	24 25 42.5	+0.098
2	6 49 33.84	2.1752	24 25 44.9	−0.019
3	6 51 44.37	2.1758	24 25 40.2	0.136
4	6 53 54.94	2.1764	24 25 28.5	0.252
5	6 56 5.54	2.1770	24 25 9.9	0.368
6	6 58 16.18	2.1776	24 24 44.3	0.485
7	7 0 26.85	2.1781	24 24 11.7	0.602
8	7 2 37.55	2.1786	24 23 32.1	0.719
9	7 4 48.28	2.1790	24 22 45.4	0.837
10	7 6 59.03	2.1793	24 21 51.6	0.955
11	7 9 9.80	2.1797	24 20 50.8	1.072
12	7 11 20.59	2.1800	24 19 43.0	1.188
13	7 13 31.40	2.1803	24 18 28.2	1.306
14	7 15 42.23	2.1805	24 17 6.3	1.424
15	7 17 53.06	2.1806	24 15 37.3	1.542
16	7 20 3.90	2.1807	24 14 1.3	1.659
17	7 22 14.75	2.1809	24 12 18.3	1.776
18	7 24 25.61	2.1810	24 10 28.2	1.893
19	7 26 36.47	2.1811	24 8 31.1	2.010
20	7 28 47.34	2.1810	24 6 27.0	2.127
21	7 30 58.19	2.1809	24 4 15.8	2.245
22	7 33 9.04	2.1809	24 1 57.6	2.362
23	7 35 19.90	2.1808	23 59 32.4	2.479
24	7 37 30.74	2.1806	N.23 57 0.1	2.597

SATURDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 37 30.74	2.1806	N.23 57 0.1	2.597
1	7 39 41.57	2.1804	23 54 20.8	2.713
2	7 41 52.39	2.1801	23 51 34.5	2.830
3	7 44 3.19	2.1798	23 48 41.2	2.947
4	7 46 13.97	2.1796	23 45 40.9	3.063
5	7 48 24.74	2.1792	23 42 33.6	3.180
6	7 50 35.48	2.1788	23 39 19.3	3.297
7	7 52 46.20	2.1785	23 35 58.0	3.413
8	7 54 56.90	2.1780	23 32 29.7	3.530
9	7 57 7.56	2.1774	23 28 54.4	3.646
10	7 59 18.19	2.1769	23 25 12.2	3.762
11	8 1 28.79	2.1764	23 21 23.0	3.877
12	8 3 39.36	2.1758	23 17 26.9	3.992
13	8 5 49.89	2.1753	23 13 23.9	4.108
14	8 8 0.39	2.1747	23 9 13.9	4.224
15	8 10 10.85	2.1739	23 4 57.0	4.339
16	8 12 21.26	2.1732	23 0 33.2	4.454
17	8 14 31.63	2.1724	22 56 2.5	4.568
18	8 16 41.95	2.1717	22 51 25.0	4.682
19	8 18 52.23	2.1709	22 46 40.6	4.797
20	8 21 2.46	2.1701	22 41 49.4	4.911
21	8 23 12.64	2.1693	22 36 51.3	5.025
22	8 25 22.77	2.1684	22 31 46.4	5.138
23	8 27 32.84	2.1674	N.22 26 34.7	5.251

SUNDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 29 42.86	2.1665	N.22 21 16.3	5.363
1	8 31 52.82	2.1656	22 15 51.1	5.476
2	8 34 2.73	2.1646	22 10 19.2	5.588
3	8 36 12.58	2.1636	22 4 40.5	5.701
4	8 38 22.36	2.1625	21 58 55.1	5.813
5	8 40 32.08	2.1615	21 53 2.9	5.926
6	8 42 41.74	2.1605	21 47 4.0	6.037
7	8 44 51.34	2.1594	21 40 58.5	6.147
8	8 47 0.87	2.1583	21 34 46.4	6.257
9	8 49 10.34	2.1572	21 28 27.7	6.367
10	8 51 19.74	2.1561	21 22 2.4	6.477
11	8 53 29.07	2.1549	21 15 30.5	6.586
12	8 55 38.33	2.1537	21 8 52.1	6.695
13	8 57 47.52	2.1526	21 2 7.1	6.804
14	8 59 56.64	2.1513	20 55 15.6	6.912
15	9 2 5.68	2.1501	20 48 17.7	7.019
16	9 4 14.65	2.1489	20 41 13.3	7.127
17	9 6 23.55	2.1478	20 34 2.5	7.234
18	9 8 32.38	2.1466	20 26 45.2	7.342
19	9 10 41.14	2.1454	20 19 21.5	7.448
20	9 12 49.82	2.1440	20 11 51.5	7.553
21	9 14 58.42	2.1427	20 4 15.2	7.657
22	9 17 6.94	2.1414	19 56 32.6	7.762
23	9 19 15.39	2.1402	19 48 43.8	7.866
24	9 21 23.76	2.1389	N.19 40 48.7	7.970

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 21 23.76	2.1389	N.19 40 48.7	7.970
1	9 23 32.05	2.1375	19 32 47.4	8.073
2	9 25 40.27	2.1363	19 24 39.9	8.177
3	9 27 48.41	2.1350	19 16 26.1	8.280
4	9 29 56.47	2.1336	19 8 6.2	8.382
5	9 32 4.45	2.1323	18 59 40.3	8.482
6	9 34 12.35	2.1311	18 51 8.4	8.582
7	9 36 20.18	2.1299	18 42 30.4	8 683
8	9 38 27.94	2.1286	18 33 46.4	8.783
9	9 40 35.61	2.1273	18 24 56.5	8.882
10	9 42 43.21	2.1260	18 16 0.6	8.982
11	9 44 50.73	2.1247	18 6 58.7	9.081
12	9 46 58.18	2.1235	17 57 50.9	9.178
13	9 49 5.55	2.1222	17 48 37.3	9.274
14	9 51 12.84	2.1209	17 39 18.0	9.370
15	9 53 20.05	2.1196	17 29 52.9	9.466
16	9 55 27.19	2.1184	17 20 22.1	9.561
17	9 57 34.26	2.1173	17 10 45.6	9.656
18	9 59 41.26	2.1160	17 1 3.4	9.751
19	10 1 48.18	2.1148	16 51 15.5	9.844
20	10 3 55.03	2.1136	16 41 22.1	9.936
21	10 6 1.81	2.1124	16 31 23.2	10.027
22	10 8 8.52	2.1112	16 21 18.8	10.119
23	10 10 15.16	2.1100	N.16 11 8.9	10.211

TUESDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 12 21.73	2.1089	N.16 0 53.5	10.301
1	10 14 28.23	2.1078	15 50 32.8	10.389
2	10 16 34.67	2.1067	15 40 6.8	10.477
3	10 18 41.04	2.1056	15 29 35.5	10.566
4	10 20 47.35	2.1046	15 18 58.9	10.654
5	10 22 53.60	2.1036	15 8 17.0	10.742
6	10 24 59.78	2.1026	14 57 29.9	10.828
7	10 27 5.91	2.1016	14 46 37.7	10.912
8	10 29 11.97	2.1006	14 35 40.5	10.996
9	10 31 17.98	2.0997	14 24 38.2	11.080
10	10 33 23.94	2.0988	14 13 30.9	11.162
11	10 35 29.84	2.0978	14 2 18.7	11.244
12	10 37 35.68	2.0970	13 51 1.6	11.326
13	10 39 41.48	2.0962	13 39 39.6	11.407
14	10 41 47.22	2.0953	13 28 12.8	11.487
15	10 43 52.92	2.0946	13 16 41.2	11.566
16	10 45 58.57	2.0939	13 5 4.9	11.644
17	10 48 4.18	2.0931	12 53 23.9	11.722
18	10 50 9.74	2.0924	12 41 38.3	11.798
19	10 52 15.26	2.0918	12 29 48.1	11.874
20	10 54 20.75	2.0912	12 17 53.4	11.948
21	10 56 26.20	2.0906	12 5 54.3	12.023
22	10 58 31.61	2.0900	11 53 50.7	12.097
23	11 0 37.00	2.0895	11 41 42.7	12.169
24	11 2 42.35	2.0890	N.11 29 30.4	12.241

WEDNESDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 2 42.35	2.0890	N.11 29 30.4	12.241
1	11 4 47.67	2.0885	11 17 13.8	12.312
2	11 6 52.97	2.0882	11 4 53.0	12.381
3	11 8 58.25	2.0878	10 52 28.1	12.449
4	11 11 3.50	2.0875	10 39 59.1	12.517
5	11 13 8.74	2.0872	10 27 26.0	12.585
6	11 15 13.96	2.0868	10 14 48.9	12.651
7	11 17 19.15	2.0865	10 2 7.9	12.716
8	11 19 24.34	2.0864	9 49 23.0	12.780
9	11 21 29.53	2.0862	9 36 34.3	12.843
10	11 23 34.70	2.0860	9 23 41.8	12.907
11	11 25 39.86	2.0860	9 10 45.5	12.969
12	11 27 45.03	2.0861	8 57 45.5	13.029
13	11 29 50.20	2.0861	8 44 42.0	13.088
14	11 31 55.37	2.0862	8 31 35.0	13.146
15	11 34 0.55	2.0864	8 18 24.5	13.203
16	11 36 5.74	2.0866	8 5 10.6	13.259
17	11 38 10.94	2.0867	7 51 53.4	13.314
18	11 40 16.15	2.0870	7 38 32.9	13.369
19	11 42 21.38	2.0873	7 25 9.1	13.423
20	11 44 26.63	2.0877	7 11 42.1	13.476
21	11 46 31.91	2.0881	6 58 12.0	13.527
22	11 48 37.21	2.0886	6 44 38.9	13.576
23	11 50 42.54	2.0891	N. 6 31 2.9	13.624

THURSDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 52 47.90	2.0897	N. 6 17 24.0	13.672
1	11 54 53.30	2.0903	6 3 42.3	13.718
2	11 56 58.73	2.0909	5 49 57.8	13.765
3	11 59 4.20	2.0916	5 36 10.5	13.810
4	12 1 9.72	2.0924	5 22 20.6	13.853
5	12 3 15.28	2.0932	5 8 28.1	13.896
6	12 5 20.90	2.0942	4 54 33.1	13.937
7	12 7 26.58	2.0951	4 40 35.7	13.976
8	12 9 32.31	2.0959	4 26 36.0	14.015
9	12 11 38.09	2.0969	4 12 33.9	14.053
10	12 13 43.94	2.0980	3 58 29.6	14.089
11	12 15 49.85	2.0991	3 44 23.2	14.124
12	12 17 55.83	2.1003	3 30 14.7	14.158
13	12 20 1.89	2.1016	3 16 4.2	14.191
14	12 22 8.02	2.1028	3 1 51.8	14.222
15	12 24 14.23	2.1042	2 47 37.5	14.252
16	12 26 20.53	2.1056	2 33 21.5	14.281
17	12 28 26.91	2.1070	2 19 3.8	14.309
18	12 30 33.37	2.1085	2 4 44.4	14.336
19	12 32 39.93	2.1101	1 50 23.5	14.361
20	12 34 46.59	2.1118	1 36 1.1	14.385
21	12 36 53.35	2.1135	1 21 37.3	14.407
22	12 39 0.21	2.1152	1 7 12.2	14.429
23	12 41 7.18	2.1170	0 52 45.8	14.449
24	12 43 14.25	2.1189	N. 0 38 18.3	14.467

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 13.					SUNDAY 15.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 43 14.25	2.1189	N. 0 38 18.3	14.467	0	14 28 9.90	2.2738	S. 10 50 4.0	13.618
1	12 45 21.44	2.1209	0 23 49.7	14.495	1	14 30 26.46	2.2782	11 3 39.4	13.562
2	12 47 28.75	2.1228	N. 0 9 20.1	14.501	2	14 32 43.29	2.2826	11 17 11.4	13.503
3	12 49 36.18	2.1248	S. 0 5 10.4	14.515	3	14 35 0.38	2.2871	11 30 39.8	13.442
4	12 51 43.73	2.1268	0 19 41.7	14.528	4	14 37 17.75	2.2917	11 44 4.5	13.380
5	12 53 51.40	2.1289	0 34 13.8	14.540	5	14 39 35.39	2.2963	11 57 25.4	13.317
6	12 55 59.20	2.1312	0 48 46.5	14.550	6	14 41 53.31	2.3010	12 10 42.5	13.252
7	12 58 7.15	2.1335	1 3 19.8	14.559	7	14 44 11.51	2.3056	12 23 55.6	13.184
8	13 0 15.22	2.1358	1 17 53.6	14.567	8	14 46 29.99	2.3103	12 37 4.6	13.115
9	13 2 23.44	2.1382	1 32 27.9	14.574	9	14 48 48.75	2.3150	12 50 9.4	13.044
10	13 4 31.81	2.1407	1 47 2.5	14.578	10	14 51 7.79	2.3198	13 3 9.9	12.972
11	13 6 40.32	2.1432	2 1 37.3	14.582	11	14 53 27.13	2.3246	13 16 6.0	12.898
12	13 8 48.98	2.1457	2 16 12.3	14.583	12	14 55 46.74	2.3293	13 28 57.6	12.822
13	13 10 57.80	2.1483	2 30 47.3	14.583	13	14 58 6.64	2.3341	13 41 44.6	12.744
14	13 13 6.78	2.1509	2 45 22.3	14.582	14	15 0 26.84	2.3390	13 54 26.9	12.666
15	13 15 15.91	2.1536	2 59 57.2	14.580	15	15 2 47.32	2.3439	14 7 4.5	12.585
16	13 17 25.21	2.1564	3 14 31.9	14.576	16	15 5 8.10	2.3488	14 19 37.1	12.502
17	13 19 34.68	2.1593	3 29 6.3	14.571	17	15 7 29.17	2.3536	14 32 4.7	12.417
18	13 21 44.33	2.1623	3 43 40.4	14.564	18	15 9 50.53	2.3585	14 44 27.2	12.332
19	13 23 54.16	2.1653	3 58 14.0	14.556	19	15 12 12.19	2.3634	14 56 44.5	12.244
20	13 26 4.16	2.1688	4 12 47.1	14.547	20	15 14 34.14	2.3684	15 8 56.5	12.155
21	13 28 14.34	2.1712	4 27 19.6	14.535	21	15 16 56.39	2.3733	15 21 3.1	12.063
22	13 30 24.70	2.1743	4 41 51.3	14.521	22	15 19 18.93	2.3782	15 33 4.1	11.971
23	13 32 35.26	2.1775	S. 4 56 22.1	14.506	23	15 21 41.77	2.3831	S. 15 44 59.6	11.878
	SATURDAY 14.					MONDAY 16.			
0	13 34 46.00	2.1807	S. 5 10 52.0	14.490	0	15 24 4.91	2.3881	S. 15 56 49.4	11.782
1	13 36 56.94	2.1840	5 25 20.9	14.472	1	15 26 28.35	2.3931	16 8 33.4	11.683
2	13 39 8.09	2.1875	5 39 48.7	14.452	2	15 28 52.08	2.3980	16 20 11.4	11.583
3	13 41 19.44	2.1909	5 54 15.2	14.431	3	15 31 16.11	2.4030	16 31 43.4	11.482
4	13 43 30.99	2.1942	6 8 40.4	14.409	4	15 33 40.44	2.4080	16 43 9.3	11.380
5	13 45 42.74	2.1977	6 23 4.3	14.386	5	15 36 5.07	2.4130	16 54 29.0	11.276
6	13 47 54.71	2.2013	6 37 26.7	14.360	6	15 38 30.00	2.4179	17 5 42.4	11.170
7	13 50 6.90	2.2050	6 51 47.5	14.333	7	15 40 55.22	2.4228	17 16 49.4	11.063
8	13 52 19.31	2.2086	7 6 6.7	14.305	8	15 43 20.73	2.4277	17 27 50.0	10.955
9	13 54 31.93	2.2122	7 20 24.1	14.274	9	15 45 46.54	2.4326	17 38 44.0	10.844
10	13 56 44.78	2.2160	7 34 39.6	14.242	10	15 48 12.65	2.4375	17 49 31.3	10.732
11	13 58 57.85	2.2200	7 48 53.1	14.208	11	15 50 39.05	2.4424	18 0 11.8	10.618
12	14 1 11.17	2.2238	8 3 4.5	14.172	12	15 53 5.74	2.4473	18 10 45.4	10.502
13	14 3 24.71	2.2277	8 17 13.7	14.135	13	15 55 32.72	2.4521	18 21 12.0	10.385
14	14 5 38.49	2.2316	8 31 20.7	14.097	14	15 57 59.99	2.4569	18 31 31.6	10.267
15	14 7 52.51	2.2356	8 45 25.4	14.057	15	16 0 27.55	2.4617	18 41 44.1	10.148
16	14 10 6.77	2.2397	8 59 27.6	14.015	16	16 2 55.40	2.4665	18 51 49.3	10.026
17	14 12 21.27	2.2438	9 13 27.2	13.971	17	16 5 23.53	2.4712	19 1 47.2	9.902
18	14 14 36.02	2.2480	9 27 24.1	13.925	18	16 7 51.94	2.4757	19 11 37.6	9.777
19	14 16 51.03	2.2522	9 41 18.2	13.878	19	16 10 20.62	2.4804	19 21 20.5	9.652
20	14 19 6.29	2.2565	9 55 9.5	13.830	20	16 12 49.59	2.4850	19 30 55.8	9.525
21	14 21 21.81	2.2607	10 8 57.8	13.780	21	16 15 18.83	2.4897	19 40 23.5	9.397
22	14 23 37.58	2.2650	10 22 43.1	13.728	22	16 17 48.35	2.4942	19 49 43.4	9.266
23	14 25 53.61	2.2694	15 36 25.2	13.674	23	16 20 18.13	2.4987	19 58 55.4	9.133
24	14 28 9.90	2.2738	S. 10 50 4.0	13.618	24	16 22 48.19	2.5033	S. 20 7 59.4	9.000

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 22 48.19	2.5033	S. 20 7 59.4	9.000
1	16 25 18.51	2.5075	20 16 55.4	8.866
2	16 27 49.09	2.5117	20 25 43.3	8.731
3	16 30 19.92	2.5160	20 34 23.1	8.594
4	16 32 51 01	2.5203	20 42 54.6	8.456
5	16 35 22.35	2.5243	20 51 17.8	8.317
6	16 37 53.93	2.5285	20 59 32.6	8.176
7	16 40 25.77	2.5326	21 7 38.9	8.033
8	16 42 57.84	2.5365	21 15 36.6	7.890
9	16 45 30.14	2.5404	21 23 25.7	7.746
10	16 48 2.68	2.5442	21 31 6.1	7.600
11	16 50 35.44	2.5478	21 38 37.7	7.452
12	16 53 8.41	2.5515	21 46 0.4	7.304
13	16 55 41.62	2.5551	21 53 14.2	7.156
14	16 58 15.03	2.5585	22 0 19.1	7.006
15	17 0 48.64	2.5619	22 7 14.9	6.854
16	17 3 22.46	2.5653	22 14 1.6	6.702
17	17 5 56.48	2.5685	22 20 39.2	6.550
18	17 8 30.68	2.5716	22 27 7.6	6.396
19	17 11 5.07	2.5747	22 33 26.7	6.240
20	17 13 39.64	2.5777	22 39 36.4	6.083
21	17 16 14.39	2.5806	22 45 36.7	5.927
22	17 18 49.32	2.5833	22 51 27.6	5.769
23	17 21 24.39	2.5859	S. 22 57 9.0	5.611

WEDNESDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 23 59.62	2.5885	S. 23 2 40.9	5.452
1	17 26 35.01	2.5910	23 8 3.2	5.291
2	17 29 10.54	2.5933	23 13 15.8	5.130
3	17 31 46.20	2.5954	23 18 18.8	4.969
4	17 34 21.99	2.5976	23 23 12.1	4.807
5	17 36 57.91	2.5997	23 27 55.6	4.643
6	17 39 33.95	2.6015	23 32 29.2	4.478
7	17 42 10.09	2.6033	23 36 53.0	4.315
8	17 44 46.35	2.6050	23 41 7.0	4.151
9	17 47 22.70	2.6065	23 45 11.1	3.986
10	17 49 59.13	2.6079	23 49 5.3	3.820
11	17 52 35.65	2.6093	23 52 49.5	3.653
12	17 55 12.25	2.6105	23 56 23.7	3.487
13	17 57 48.91	2.6115	23 59 47.9	3.319
14	18 0 25.63	2.6125	24 3 2.0	3.152
15	18 3 2.40	2.6133	24 6 6.1	2.984
16	18 5 39.22	2.6141	24 9 0.1	2.816
17	18 8 16.09	2.6146	24 11 44.0	2.648
18	18 10 52.97	2.6150	24 14 17.9	2.481
19	18 13 29.89	2.6154	24 16 41.7	2.312
20	18 16 6.82	2.6155	24 18 55.3	2.142
21	18 18 43.75	2.6155	24 20 58.7	1.972
22	18 21 20.68	2.6155	24 22 51.9	1.803
23	18 23 57.61	2.6154	24 24 35.0	1.634
24	18 26 34.52	2.6150	S. 24 26 8.0	1.466

THURSDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 26 34.52	2.6150	S. 24 26 8.0	1.466
1	18 29 11.41	2.6145	24 27 30.9	1.297
2	18 31 48.26	2.6140	24 28 43.6	1.127
3	18 34 25.07	2.6133	24 29 46.1	0.958
4	18 37 1.85	2.6125	24 30 38.5	0.789
5	18 39 38.57	2.6114	24 31 20.8	0.620
6	18 42 15.22	2.6102	24 31 52.9	0.451
7	18 44 51.80	2.6090	24 32 14.9	0.283
8	18 47 28.31	2.6078	24 32 26.9	−0.116
9	18 50 4.74	2.6063	24 32 28.8	+0.052
10	18 52 41.07	2.6046	24 32 20.6	0.221
11	18 55 17.30	2.6030	24 32 2.3	0.388
12	18 57 53.44	2.6012	24 31 34.0	0.556
13	19 0 29.45	2.5993	24 30 55.7	0.722
14	19 3 5.34	2.5972	24 30 7.4	0.888
15	19 5 41.11	2.5950	24 29 9.1	1.054
16	19 8 16.73	2.5926	24 28 0.9	1.219
17	19 10 52.22	2.5902	24 26 42.8	1.383
18	19 13 27.55	2.5876	24 25 14.9	1.547
19	19 16 2.73	2.5849	24 23 37.1	1.712
20	19 18 37.74	2.5820	24 21 49.5	1.875
21	19 21 12.57	2.5791	24 19 52.1	2.037
22	19 23 47.23	2.5762	24 17 45.0	2.199
23	19 26 21.72	2.5731	S. 24 15 28.2	2.360

FRIDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 28 56.00	2.5698	S. 24 13 1.8	2.520
1	19 31 30.09	2.5664	24 10 25.8	2.680
2	19 34 3.97	2.5630	24 7 40.2	2.840
3	19 36 37.65	2.5595	24 4 45.0	2.998
4	19 39 11.11	2.5558	24 1 40.4	3.155
5	19 41 44.35	2.5520	23 58 26.4	3.312
6	19 44 17.35	2.5482	23 55 3.0	3.467
7	19 46 50.13	2.5443	23 51 30.3	3.622
8	19 49 22.66	2.5403	23 47 48.3	3.777
9	19 51 54.96	2.5361	23 43 57.1	3.929
10	19 54 27.00	2.5319	23 39 56.8	4.081
11	19 56 58.79	2.5276	23 35 47.4	4.233
12	19 59 30.31	2.5232	23 31 28.9	4.383
13	20 2 1.57	2.5188	23 27 1.4	4.532
14	20 4 32.56	2.5142	23 22 25.0	4.680
15	20 7 3.27	2.5095	23 17 39.8	4.827
16	20 9 33.71	2.5049	23 12 45.8	4.973
17	20 12 3.86	2.5002	23 7 43.0	5.118
18	20 14 33.73	2.4953	23 2 31.6	5.261
19	20 17 3.29	2.4904	22 57 11.6	5.404
20	20 19 32.57	2.4855	22 51 43.1	5.547
21	20 22 1.55	2.4804	22 46 6.0	5.688
22	20 24 30.21	2.4753	22 40 20.5	5.827
23	20 26 58.58	2.4702	22 34 26.7	5.965
24	20 29 26.64	2.4650	S. 22 28 24.7	6.102

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 29 26.64	2.4650	S. 22 28 24.7	6.102
1	20 31 54.38	2.4597	22 22 14.5	6.237
2	20 34 21.81	2.4544	22 15 56.2	6.372
3	20 36 48.91	2.4490	22 9 29.8	6.507
4	20 39 15.69	2.4437	22 2 55.4	6.639
5	20 41 42.15	2.4382	21 56 13.1	6.770
6	20 44 8.27	2.4326	21 49 23.0	6.899
7	20 46 34.07	2.4272	21 42 25.2	7.028
8	20 48 59.53	2.4216	21 35 19.7	7.156
9	20 51 24.66	2.4160	21 28 6.5	7.282
10	20 53 49.45	2.4103	21 20 45.8	7.407
11	20 56 13.90	2.4046	21 13 17.7	7.529
12	20 58 38.00	2.3989	21 5 42.3	7.651
13	21 1 1.77	2.3932	20 57 59.6	7.772
14	21 3 25.19	2.3875	20 50 9.6	7.892
15	21 5 48.27	2.3817	20 42 12.5	8.011
16	21 8 11.00	2.3760	20 34 8.3	8.128
17	21 10 33.39	2.3702	20 25 57.1	8.244
18	21 12 55.42	2.3644	20 17 39.0	8.358
19	21 15 17.11	2.3586	20 9 14.1	8.471
20	21 17 38.45	2.3527	20 0 42.5	8.582
21	21 19 59.44	2.3469	19 52 4.2	8.692
22	21 22 20.08	2.3410	19 43 19.4	8.801
23	21 24 40.37	2.3351	S. 19 34 28.1	8.908

SUNDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 27 0.30	2.3293	S. 19 25 30.3	9.016
1	21 29 19.89	2.3235	19 16 26.2	9.120
2	21 31 39.12	2.3177	19 7 15.9	9.223
3	21 33 58.00	2.3119	18 57 59.4	9.326
4	21 36 16.55	2.3061	18 48 36.8	9.427
5	21 38 34.73	2.3002	18 39 8.2	9.527
6	21 40 52.57	2.2944	18 29 33.6	9.625
7	21 43 10.06	2.2886	18 19 53.2	9.721
8	21 45 27.20	2.2828	18 10 7.1	9.817
9	21 47 43.99	2.2771	18 0 15.2	9.912
10	21 50 0.45	2.2714	17 50 17.7	10.004
11	21 52 16.55	2.2656	17 40 14.7	10.095
12	21 54 32.31	2.2598	17 30 6.3	10.184
13	21 56 47.73	2.2541	17 19 52.6	10.273
14	21 59 2.80	2.2485	17 9 33.5	10.362
15	22 1 17.55	2.2429	16 59 9.2	10.448
16	22 3 31.95	2.2372	16 48 39.8	10.532
17	22 5 46.01	2.2316	16 38 5.4	10.615
18	22 7 59.74	2.2261	16 27 26.0	10.697
19	22 10 13.14	2.2205	16 16 41.7	10.778
20	22 12 26.20	2.2150	16 5 52.6	10.857
21	22 14 38.94	2.2095	15 54 58.8	10.935
22	22 16 51.34	2.2041	15 44 0.4	11.011
23	22 19 3.43	2.1988	15 32 57.5	11.086
24	22 21 15.19	2.1934	S. 15 21 50.1	11.161

MONDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 21 15.19	2.1934	S. 15 21 50.1	11.161
1	22 23 26.63	2.1880	15 10 38.2	11.234
2	22 25 37.75	2.1827	14 59 22.0	11.305
3	22 27 48.55	2.1775	14 48 1.6	11.375
4	22 29 59.05	2.1723	14 36 37.0	11.444
5	22 32 9.23	2.1672	14 25 8.3	11.512
6	22 34 19.11	2.1620	14 13 35.6	11.577
7	22 36 28.67	2.1569	14 1 59.0	11.642
8	22 38 37.93	2.1520	13 50 18.5	11.707
9	22 40 46.91	2.1470	13 38 34.2	11.769
10	22 42 55.57	2.1420	13 26 46.2	11.830
11	22 45 3.94	2.1370	13 14 54.6	11.890
12	22 47 12.01	2.1321	13 2 59.4	11.949
13	22 49 19.80	2.1273	12 51 0.7	12.007
14	22 51 27.30	2.1226	12 38 58.6	12.062
15	22 53 34.51	2.1180	12 26 53.2	12.117
16	22 55 41.46	2.1134	12 14 44.6	12.170
17	22 57 48.12	2.1088	12 2 32.8	12.222
18	22 59 54.51	2.1042	11 50 17.9	12.273
19	23 2 0.63	2.0997	11 38 0.0	12.323
20	23 4 6.48	2.0953	11 25 39.1	12.372
21	23 6 12.06	2.0909	11 13 15.3	12.420
22	23 8 17.38	2.0866	11 0 48.7	12.467
23	23 10 22.46	2.0824	S. 10 48 19.3	12.512

TUESDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 12 27.27	2.0781	S. 10 35 47.3	12.555
1	23 14 31.83	2.0739	10 23 12.7	12.597
2	23 16 36.14	2.0699	10 10 35.6	12.638
3	23 18 40.21	2.0659	9 57 56.1	12.678
4	23 20 44.04	2.0619	9 45 14.2	12.718
5	23 22 47.63	2.0579	9 32 29.9	12.757
6	23 24 50.99	2.0541	9 19 43.3	12.794
7	23 26 54.12	2.0503	9 6 54.6	12.828
8	23 28 57.02	2.0465	8 54 3.9	12.862
9	23 30 59.70	2.0428	8 41 11.2	12.895
10	23 33 2.15	2.0391	8 28 16.5	12.928
11	23 35 4.39	2.0355	8 15 19.8	12.961
12	23 37 6.42	2.0321	8 2 21.2	12.991
13	23 39 8.24	2.0286	7 49 20.9	13.018
14	23 41 9.85	2.0252	7 36 19.0	13.045
15	23 43 11.26	2.0218	7 23 15.5	13.072
16	23 45 12.47	2.0186	7 10 10.4	13.098
17	23 47 13.49	2.0155	6 57 3.8	13.123
18	23 49 14.32	2.0123	6 43 55.7	13.146
19	23 51 14.97	2.0091	6 30 46.3	13.167
20	23 53 15.42	2.0060	6 17 35.6	13.188
21	23 55 15.69	2.0031	6 4 23.7	13.208
22	23 57 15.79	2.0003	5 51 10.7	13.227
23	23 59 15.72	1.9974	5 37 56.5	13.245
24	0 1 15.47	1.9945	S. 5 24 41.3	13.262

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 1 15.47	1.9945	S. 5 24 41.3	13.262
1	0 3 15.06	1.9919	5 11 25.1	13.277
2	0 5 14.49	1.9892	4 58 8.0	13.292
3	0 7 13.76	1.9866	4 44 50.1	13.305
4	0 9 12.89	1.9840	4 31 31.4	13.317
5	0 11 11.85	1.9815	4 18 12.0	13.329
6	0 13 10.67	1.9791	4 4 51.9	13.340
7	0 15 9.34	1.9768	3 51 31.2	13.349
8	0 17 7.88	1.9745	3 38 10.0	13.357
9	0 19 6.28	1.9723	3 24 48.4	13.363
10	0 21 4.55	1.9701	3 11 26.4	13.370
11	0 23 2.69	1.9680	2 58 4.0	13.376
12	0 25 0.71	1.9660	2 44 41.3	13.380
13	0 26 58.60	1.9640	2 31 18.4	13.383
14	0 28 56.38	1.9621	2 17 55.3	13.386
15	0 30 54.05	1.9601	2 4 32.1	13.387
16	0 32 51.60	1.9582	1 51 8.9	13.386
17	0 34 49.04	1.9565	1 37 45.8	13.384
18	0 36 46.38	1.9549	1 24 22.8	13.383
19	0 38 43.63	1.9533	1 10 59.9	13.381
20	0 40 40.78	1.9517	0 57 37.1	13.378
21	0 42 37.83	1.9502	0 44 14.6	13.378
22	0 44 34.80	1.9488	0 30 52.4	13.368
23	0 46 31.69	1.9474	S. 0 17 30.5	13.362

THURSDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 48 28.49	1.9460	S. 0 4 9.0	13.353
1	0 50 25.21	1.9448	N. 0 9 11.9	13.343
2	0 52 21.86	1.9436	0 22 32.2	13.333
3	0 54 18.44	1.9424	0 35 51.9	13.323
4	0 56 14.95	1.9413	0 49 11.0	13.312
5	0 58 11.39	1.9402	1 2 29.4	13.301
6	1 0 7.77	1.9393	1 15 47.1	13.288
7	1 2 4.11	1.9384	1 29 3.9	13.273
8	1 4 0.38	1.9375	1 42 19.8	13.257
9	1 5 56.60	1.9366	1 55 34.7	13.240
10	1 7 52.77	1.9359	2 8 48.6	13.223
11	1 9 48.91	1.9351	2 22 1.4	13.205
12	1 11 44.99	1.9345	2 35 13.2	13.187
13	1 13 41.04	1.9339	2 48 23.8	13.166
14	1 15 37.06	1.9335	3 1 33.1	13.145
15	1 17 33.06	1.9330	3 14 41.2	13.124
16	1 19 29.02	1.9325	3 27 48.0	13.102
17	1 21 24.96	1.9321	3 40 53.4	13.078
18	1 23 20.88	1.9318	3 53 57.3	13.053
19	1 25 16.78	1.9315	4 6 59.7	13.027
20	1 27 12.66	1.9313	4 20 0.5	13.001
21	1 29 8.54	1.9312	4 32 59.8	12.975
22	1 31 4.42	1.9311	4 45 57.5	12.947
23	1 33 0.28	1.9310	4 58 53.5	12.918
24	1 34 56.13	1.9309	N. 5 11 47.7	12.888

FRIDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 34 56.13	1.9309	N. 5 11 47.7	12.888
1	1 36 51.99	1.9311	5 24 40.1	12.857
2	1 38 47.87	1.9313	5 37 30.6	12.825
3	1 40 43.75	1.9314	5 50 19.1	12.793
4	1 42 39.63	1.9316	6 3 5.7	12.760
5	1 44 35.54	1.9319	6 15 50.3	12.726
6	1 46 31.46	1.9321	6 28 32.8	12.691
7	1 48 27.39	1.9325	6 41 13.2	12.655
8	1 50 23.36	1.9329	6 53 51.4	12.618
9	1 52 19.34	1.9333	7 6 27.4	12.581
10	1 54 15.35	1.9338	7 19 1.1	12.542
11	1 56 11.40	1.9344	7 31 32.4	12.502
12	1 58 7.48	1.9350	7 44 1.4	12.462
13	2 0 3.60	1.9356	7 56 27.9	12.421
14	2 1 59.75	1.9363	8 8 51.9	12.379
15	2 3 55.96	1.9370	8 21 13.4	12.337
16	2 5 52.20	1.9377	8 33 32.4	12.294
17	2 7 48.49	1.9386	8 45 48.7	12.249
18	2 9 44.83	1.9396	8 58 2.3	12.203
19	2 11 41.24	1.9405	9 10 13.1	12.158
20	2 13 37.69	1.9414	9 22 21.2	12.112
21	2 15 34.20	1.9424	9 34 26.5	12.064
22	2 17 30.77	1.9434	9 46 28.9	12.015
23	2 19 27.41	1.9444	N. 9 58 28.3	11.965

SATURDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 21 24.10	1.9455	N.10 10 24.7	11.915
1	2 23 20.87	1.9467	10 22 18.1	11.864
2	2 25 17.71	1.9479	10 34 8.4	11.812
3	2 27 14.62	1.9492	10 45 55.6	11.760
4	2 29 11.62	1.9505	10 57 39.6	11.707
5	2 31 8.68	1.9517	11 9 20.4	11.652
6	2 33 5.83	1.9531	11 20 57.9	11.597
7	2 35 3.06	1.9545	11 32 32.1	11.542
8	2 37 0.37	1.9559	11 44 2.9	11.485
9	2 38 57.77	1.9574	11 55 30.3	11.427
10	2 40 55.27	1.9589	12 6 54.2	11.370
11	2 42 52.84	1.9604	12 18 14.7	11.312
12	2 44 50.51	1.9620	12 29 31.6	11.252
13	2 46 48.28	1.9636	12 40 44.9	11.191
14	2 48 46.14	1.9652	12 51 54.5	11.129
15	2 50 44.10	1.9669	13 3 0.4	11.067
16	2 52 42.16	1.9686	13 14 2.6	11.005
17	2 54 40.33	1.9704	13 25 1.0	10.942
18	2 56 38.60	1.9722	13 35 55.6	10.877
19	2 58 36.99	1.9739	13 46 46.3	10.812
20	3 0 35.47	1.9757	13 57 33.0	10.746
21	3 2 34.06	1.9775	14 8 15.8	10.680
22	3 4 32.77	1.9794	14 18 54.6	10.612
23	3 6 31.59	1.9812	14 29 29.3	10.543
24	3 8 30.52	1.9831	N.14 39 59.8	10.474

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 29.

Hour	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 8 30.52	1.9631	N.14 39 59.8	10.474
1	3 10 29.57	1.9651	14 50 26.2	10.406
2	3 12 28.74	1.9670	15 0 48.5	10.336
3	3 14 28.02	1.9691	15 11 6.5	10.264
4	3 16 27.43	1.9911	15 21 20.2	10.192
5	3 18 26.95	1.9931	15 31 29.6	10.120
6	3 20 26.60	1.9952	15 41 34.6	10.047
7	3 22 26.38	1.9973	15 51 35.2	9.973
8	3 24 26.28	1.9944	16 1 31.3	9.898
9	3 26 26.31	2.0015	16 11 23.0	9.824
10	3 28 26.46	2.0036	16 21 10.2	9.748
11	3 30 26.74	2.0058	16 30 52.7	9.670
12	3 32 27.16	2.0080	16 40 30.6	9.592
13	3 34 27.70	2.0101	16 50 3.8	9.514
14	3 36 28.38	2.0124	16 59 32.3	9.436
15	3 38 29.19	2.0146	17 8 56.1	9.357
16	3 40 30.13	2.0169	17 18 15.1	9.276
17	3 42 31.21	2.0191	17 27 29.2	9.195
18	3 44 32.42	2.0213	17 36 38.5	9.114
19	3 46 33.76	2.0236	17 45 42.9	9.032
20	3 48 35.25	2.0259	17 54 42.3	8.948
21	3 50 36.87	2.0281	18 3 36.7	8.864
22	3 52 38.62	2.0304	18 12 26.0	8.780
23	3 54 40.52	2.0327	N.18 21 10.3	8.696

MONDAY 30.

Hour	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 56 42.55	2.0350	N.18 29 49.5	8.610
1	3 58 44.72	2.0373	18 38 23.5	8.523
2	4 0 47.03	2.0397	18 46 52.3	8.437
3	4 2 49.48	2.0420	18 55 15.9	8.349
4	4 4 52.07	2.0444	19 3 34.2	8.262
5	4 6 54.80	2.0467	19 11 47.3	8.174
6	4 8 57.67	2.0489	19 19 55.1	8.085
7	4 11 0.66	2.0512	19 27 57.5	7.994
8	4 13 3.81	2.0536	19 35 54.4	7.902
9	4 15 7.10	2.0560	19 43 45.8	7.811
10	4 17 10.53	2.0583	19 51 31.7	7.720
11	4 19 14.10	2.0606	19 59 12.2	7.628
12	4 21 17.81	2.0630	20 6 47.1	7.535
13	4 23 21.66	2.0653	20 14 16.4	7.441
14	4 25 25.64	2.0675	20 21 40.0	7.347
15	4 27 29.76	2.0699	20 28 58.0	7.252
16	4 29 34.02	2.0721	20 36 10.3	7.157
17	4 31 38.41	2.0744	20 43 16.9	7.062
18	4 33 42.95	2.0767	20 50 17.7	6.965
19	4 35 47.62	2.0789	20 57 12.7	6.867
20	4 37 52.42	2.0811	21 4 1.8	6.770
21	4 39 57.36	2.0834	21 10 45.1	6.672
22	4 42 2.44	2.0856	21 17 22.5	6.574
23	4 44 7.64	2.0878	21 23 54.0	6.475
24	4 46 12.98	2.0901	N.21 30 19.5	6.375

TUESDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 46 12.98	2.0901	N.21 30 19.5	6.375
1	4 48 18.45	2.0923	21 36 39.0	6.275
2	4 50 24.05	2.0945	21 42 52.5	6.175
3	4 52 29.78	2.0967	21 49 0.0	6.074
4	4 54 35.65	2.0988	21 55 1.4	5.972
5	4 56 41.63	2.1009	22 0 56.6	5.869
6	4 58 47.75	2.1030	22 6 45.6	5.766
7	5 0 53.99	2.1050	22 12 28.5	5.664
8	5 3 0.35	2.1071	22 18 5.3	5.562
9	5 5 6.84	2.1091	22 23 35.9	5.458
10	5 7 13.45	2.1110	22 29 0.2	5.353
11	5 9 20.17	2.1130	22 34 18.2	5.247
12	5 11 27.01	2.1151	22 39 29.8	5.141
13	5 13 33.98	2.1171	22 44 35.1	5.036
14	5 15 41.06	2.1189	22 49 34.1	4.931
15	5 17 48.24	2.1207	22 54 26.8	4.825
16	5 19 55.54	2.1226	22 59 13.1	4.717
17	5 22 2.96	2.1244	23 3 52.9	4.609
18	5 24 10.47	2.1262	23 8 26.2	4.501
19	5 26 18.10	2.1280	23 12 53.0	4.392
20	5 28 25.84	2.1297	23 17 13.3	4.284
21	5 30 33.67	2.1313	23 21 27.1	4.176
22	5 32 41.60	2.1330	23 25 34.4	4.067
23	5 34 49.64	2.1348	N.23 29 35.2	3.958

WEDNESDAY, NOVEMBER 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 36 57.78	2.1365	N.23 33 29.4	3.848

PHASES OF THE MOON.

		d	h	m
☾	Last Quarter, . . .	6	5	31.9
●	New Moon, . . .	13	18	19.2
☽	First Quarter, . .	20	11	54.5
○	Full Moon, . . .	27	20	14.3

		d	h
☾	Apogee, ...	4	20.3
☾	Perigee, ...	16	16.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Fomalhaut	W.	68° 36′ 42″	3081	70° 5′ 15″	3088	71° 33′ 39″	3096	73° 1′ 54″	3101
	α Pegasi	W.	53 7 40	3535	54 27 26	3520	55 47 28	3508	57 7 43	3497
	Pollux	E.	71 34 27	2887	70 1 51	2896	68 29 29	2909	66 57 21	2920
	Jupiter	E.	76 11 9	2923	74 39 19	2935	73 7 44	2945	71 36 22	2956
	Regulus	E.	107 33 49	2884	106 1 10	2894	104 28 44	2905	102 56 31	2916
2	Fomalhaut	W.	80 21 2	3139	81 48 24	3147	83 15 37	3154	84 42 41	3162
	α Pegasi	W.	63 51 24	3465	65 12 27	3463	66 33 33	3459	67 54 43	3457
	Pollux	E.	59 20 2	2970	57 49 12	2980	56 18 34	2989	54 48 8	2999
	Jupiter	E.	64 2 48	3005	62 32 41	3014	61 2 46	3023	59 32 2	3032
	Regulus	E.	95 18 40	2964	93 47 42	2973	92 16 55	2981	90 46 19	2990
	Sun	E.	136 2 3	3354	134 38 54	3362	133 15 54	3370	131 53 3	3378
3	α Pegasi	W.	74 40 49	3455	76 2 3	3457	77 23 15	3458	78 44 26	3459
	α Arietis	W.	31 4 28	3512	32 24 39	3480	33 45 26	3452	35 6 44	3427
	Pollux	E.	47 18 43	3041	45 49 21	3048	44 20 8	3056	42 51 4	3064
	Jupiter	E.	52 6 55	3070	50 38 9	3078	49 9 32	3083	47 41 2	3089
	Regulus	E.	83 15 51	3028	81 46 13	3034	80 16 43	3040	78 47 20	3046
	Sun	E.	125 1 2	3415	123 39 2	3421	122 17 9	3426	120 55 22	3431
4	α Pegasi	W.	85 29 56	3468	86 50 56	3471	88 11 53	3472	89 32 48	3475
	α Arietis	W.	41 59 8	3343	43 22 30	3331	44 46 6	3319	46 9 55	3309
	Pollux	E.	35 27 56	3096	33 59 42	3103	32 31 36	3110	31 3 38	3116
	Jupiter	E.	40 20 15	3114	38 52 23	3119	37 24 36	3122	35 56 53	3125
	Regulus	E.	71 22 5	3069	69 53 18	3073	68 24 36	3077	66 55 58	3079
	Sun	E.	114 7 56	3454	112 46 41	3457	111 25 29	3461	110 4 21	3463
5	α Arietis	W.	53 11 40	3268	54 36 29	3260	56 1 27	3253	57 26 34	3245
	Aldebaran	W.	21 15 56	3148	22 43 8	3138	24 10 31	3130	25 38 4	3122
	Jupiter	E.	28 39 8	3137	27 11 43	3138	25 44 20	3139	24 16 58	3141
	Regulus	E.	59 33 24	3086	58 4 57	3086	56 36 30	3086	55 8 3	3085
	Sun	E.	103 19 5	3466	101 58 3	3466	100 37 1	3465	99 15 58	3463
6	α Arietis	W.	64 34 18	3208	66 0 18	3199	67 26 28	3192	68 52 47	3184
	Aldebaran	W.	32 58 0	3088	34 26 24	3082	35 54 56	3074	37 23 37	3068
	Regulus	E.	47 45 22	3074	46 16 41	3071	44 47 56	3067	43 19 6	3064
	Sun	E.	92 30 2	3447	91 8 39	3442	89 47 10	3438	88 25 36	3431
7	α Arietis	W.	76 6 53	3139	77 34 15	3130	79 1 48	3119	80 29 34	3110
	Aldebaran	W.	44 49 21	3026	46 19 1	3018	47 48 52	3008	49 18 55	2996
	Regulus	E.	35 53 38	3039	34 24 13	3034	32 54 42	3028	31 25 4	3023
	Sun	E.	81 35 54	3394	80 13 31	3386	78 50 59	3378	77 28 17	3368
8	α Arietis	W.	87 51 34	3055	89 20 39	3043	90 49 58	3032	92 19 31	3020
	Aldebaran	W.	56 52 24	2944	58 23 47	2931	59 55 26	2919	61 27 21	2907
	Pollux	W.	13 13 33	3154	14 40 37	3104	16 8 42	3061	17 37 39	3026
	Sun	E.	70 31 46	3313	69 7 49	3300	67 43 38	3286	66 19 12	3275
9	Aldebaran	W.	69 11 2	2839	70 44 39	2825	72 18 34	2811	73 52 48	2795
	Pollux	W.	25 12 8	2894	26 44 35	2873	28 17 29	2853	29 50 48	2833
	Jupiter	W.	19 22 18	2904	20 54 32	2885	22 27 10	2867	24 0 11	2848
	Sun	E.	59 13 8	3205	57 47 5	3190	56 20 44	3176	54 54 6	3161
10	Aldebaran	W.	81 48 56	2719	83 25 11	2704	85 1 46	2688	86 38 42	2672
	Pollux	W.	37 43 38	2741	39 19 24	2723	40 55 33	2705	42 32 6	2688

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Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Fomalhaut	W.	74° 30′ 2″	3109	75° 58′ 1″	3116	77° 25′ 51″	3124	78° 53′ 31″	3132
	α Pegasi	W.	58 28 10	3488	59 48 47	3480	61 9 33	3474	62 30 26	3470
	Pollux	E.	65 25 27	2931	63 53 47	2941	62 22 20	2950	60 51 5	2960
	Jupiter	E.	70 5 14	2966	68 34 19	2976	67 3 36	2986	65 33 6	2996
	Regulus	E.	101 24 32	2926	99 52 46	2935	98 21 12	2945	96 49 50	2954
2	Fomalhaut	W.	86 9 36	3168	87 36 23	3177	89 3 0	3185	90 29 27	3193
	α Pegasi	W.	69 15 55	3456	70 37 8	3456	71 58 21	3455	73 19 35	3455
	Pollux	E.	53 17 54	3008	51 47 51	3016	50 17 58	3024	48 48 15	3033
	Jupiter	E.	58 3 29	3040	56 34 6	3048	55 4 53	3056	53 35 50	3063
	Regulus	E.	89 15 54	2998	87 45 39	3006	86 15 34	3014	84 45 38	3021
	Sun	E.	130 30 21	3386	129 7 49	3393	127 45 25	3401	126 23 10	3408
3	α Pegasi	W.	80 5 36	3461	81 26 44	3463	82 47 50	3464	84 8 54	3466
	α Arietis	W.	36 28 30	3406	37 50 40	3387	39 13 11	3371	40 36 1	3356
	Pollux	E.	41 22 10	3071	39 53 25	3078	38 24 48	3083	36 56 18	3090
	Jupiter	E.	46 12 39	3096	44 44 24	3101	43 16 15	3105	41 48 12	3110
	Regulus	E.	77 18 4	3052	75 48 55	3057	74 19 53	3061	72 50 56	3066
	Sun	E.	119 33 41	3438	118 12 7	3443	116 50 39	3446	115 29 15	3451
4	α Pegasi	W.	90 53 40	3477	92 14 30	3480	93 35 17	3482	94 56 1	3485
	α Arietis	W.	47 33 56	3300	48 58 7	3291	50 22 29	3283	51 47 0	3276
	Pollux	E.	29 35 48	3123	28 8 6	3130	26 40 33	3138	25 13 9	3144
	Jupiter	E.	34 29 14	3128	33 1 38	3131	31 34 6	3133	30 6 36	3134
	Regulus	E.	65 27 23	3082	63 58 51	3083	62 30 21	3084	61 1 52	3085
	Sun	E.	108 43 15	3464	107 22 11	3465	106 1 8	3466	104 40 6	3467
5	α Arietis	W.	58 51 50	3238	60 17 14	3231	61 42 47	3224	63 8 28	3216
	Aldebaran	W.	27 5 47	3115	28 33 38	3108	30 1 38	3102	31 29 45	3096
	Jupiter	F.	22 49 38	3143	21 22 20	3145	19 55 5	3147	18 27 52	3150
	Regulus	E.	53 39 35	3083	52 11 5	3082	50 42 33	3080	49 13 59	3078
	Sun	E.	97 54 53	3461	96 33 45	3458	95 12 34	3455	93 51 20	3452
6	α Arietis	W.	70 19 15	3175	71 45 54	3167	73 12 43	3158	74 39 42	3148
	Aldebaran	W.	38 52 26	3060	40 21 25	3052	41 50 33	3043	43 19 52	3035
	Regulus	E.	41 50 12	3060	40 21 13	3055	38 52 8	3049	37 22 56	3044
	Sun	E.	87 3 55	3425	85 42 7	3418	84 20 11	3411	82 58 7	3403
7	α Arietis	W.	81 57 32	3099	83 25 43	3089	84 54 6	3078	86 22 43	3066
	Aldebaran	W.	50 49 10	2988	52 19 38	2977	53 50 20	2966	55 21 15	2955
	Regulus	E.	29 55 20	3018	28 25 29	3012	26 55 31	3008	25 25 28	3003
	Sun	E.	76 5 24	3357	74 42 18	3346	73 19 0	3335	71 55 29	3325
8	α Arietis	W.	93 49 19	3008	95 19 22	2995	96 49 41	2982	98 20 16	2971
	Aldebaran	W.	62 59 31	2894	64 31 57	2880	66 4 41	2866	67 37 43	2853
	Pollux	W.	19 7 20	2993	20 37 41	2964	22 8 39	2939	23 40 9	2916
	Sun	E.	64 54 31	3262	63 29 35	3247	62 4 22	3234	60 38 53	3220
9	Aldebaran	W.	75 27 22	2781	77 2 15	2766	78 37 28	2750	80 13 2	2735
	Pollux	W.	31 24 33	2814	32 58 43	2795	34 33 17	2776	36 8 16	2759
	Jupiter	W.	25 33 36	2831	27 7 24	2813	28 41 35	2795	30 16 9	2779
	Sun	E.	53 27 10	3145	51 59 55	3130	50 32 22	3114	49 4 30	3099
10	Aldebaran	W.	88 16 0	2656	89 53 39	2640	91 31 40	2624	93 10 3	2608
	Pollux	W.	44 9 2	2670	45 46 22	2653	47 24 5	2636	49 2 11	2618

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Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
10	Jupiter	W.	31 51 5	2761	33 26 24	2744	35 2 5	2727	36 38 9	2710
	Sun	E.	47 36 19	3083	46 7 49	3068	44 39 0	3052	43 9 51	3036
11	Pollux	W.	50 40 41	2601	52 19 34	2585	53 58 50	2567	55 38 30	2551
	Jupiter	W.	44 44 8	2626	46 22 28	2609	48 1 11	2592	49 40 17	2576
	Sun	E.	35 39 24	2962	34 8 23	2948	32 37 5	2935	31 5 30	2922
16	Sun	W.	30 9 8	2528	31 49 42	2522	33 30 24	2517	35 11 13	2514
	Saturn	E.	41 46 39	2191	39 57 58	2190	38 9 16	2190	36 20 33	2190
	α Aquilæ	E.	68 55 54	3040	67 26 31	3063	65 57 36	3088	64 29 12	3116
17	Sun	W.	43 36 6	2509	45 17 7	2510	46 58 7	2512	48 39 4	2514
	α Aquilæ	E.	57 17 11	3315	55 53 17	3368	54 30 24	3427	53 8 38	3493
	Fomalhaut	E.	85 39 23	2355	83 54 43	2358	82 10 8	2363	80 25 40	2368
	α Pegasi	E.	103 6 28	2604	101 27 39	2602	99 48 47	2601	98 9 53	2600
18	Sun	W.	57 2 48	2532	58 43 17	2538	60 23 38	2543	62 3 51	2548
	Antares	W.	14 31 39	2559	16 11 30	2494	17 52 51	2450	19 35 15	2417
	Fomalhaut	E.	71 45 35	2405	70 2 8	2416	68 18 56	2426	66 35 59	2438
	α Pegasi	E.	89 55 41	2614	88 17 5	2621	86 38 38	2628	85 0 21	2635
19	Sun	W.	70 22 55	2583	72 2 14	2589	73 41 24	2596	75 20 24	2604
	Antares	W.	28 15 15	2352	29 59 59	2350	31 44 46	2348	33 29 35	2348
	Mars	W.	20 8 48	2501	21 50 0	2506	23 31 5	2512	25 12 2	2517
	Fomalhaut	E.	58 5 49	2511	56 24 51	2530	54 44 19	2548	53 4 13	2563
	α Pegasi	E.	76 52 6	2692	75 15 15	2706	73 38 43	2722	72 2 32	2739
20	Sun	W.	83 32 39	2646	85 10 32	2655	86 48 13	2663	88 25 42	2672
	Antares	W.	42 13 5	2364	43 57 31	2369	45 41 50	2375	47 26 1	2381
	Mars	W.	33 34 31	2553	35 14 30	2561	36 54 18	2570	38 33 54	2578
	Fomalhaut	E.	44 51 43	2703	43 15 7	2738	41 39 17	2776	40 4 18	2818
	α Pegasi	E.	64 7 43	2842	62 34 10	2867	61 1 9	2895	59 28 44	2924
21	Sun	W.	96 30 9	2717	98 6 26	2727	99 42 30	2736	101 18 22	2745
	Antares	W.	56 4 39	2415	57 47 53	2422	59 30 56	2430	61 13 48	2437
	Mars	W.	46 49 2	2621	48 27 28	2630	50 5 42	2639	51 43 44	2648
	Saturn	W.	29 36 35	2409	31 19 57	2417	33 3 8	2424	34 46 8	2433
	α Pegasi	E.	51 56 43	3106	50 28 41	3152	49 1 34	3201	47 35 26	3256
	α Arietis	E.	92 14 48	2507	90 33 45	2515	88 52 53	2525	87 12 14	2534
22	Sun	W.	109 14 37	2792	110 49 15	2802	112 23 40	2811	113 57 53	2821
	Antares	W.	69 45 29	2476	71 27 16	2485	73 8 51	2492	74 50 15	2500
	Mars	W.	59 50 53	2692	61 27 43	2701	63 4 21	2710	64 40 47	2719
	Saturn	W.	43 18 6	2475	44 59 54	2484	46 41 30	2492	48 22 55	2501
	α Pegasi	E.	40 42 41	3618	39 24 26	3715	38 7 55	3824	36 53 18	3945
	α Arietis	E.	78 52 12	2582	77 12 52	2592	75 33 46	2603	73 54 55	2613
23	Sun	W.	121 45 55	2869	123 18 54	2878	124 51 41	2887	126 24 16	2898
	Antares	W.	83 14 24	2542	84 54 39	2550	86 34 43	2559	88 14 35	2566
	Mars	W.	72 39 58	2764	74 15 13	2773	75 50 16	2782	77 25 7	2792
	Saturn	W.	56 46 57	2543	58 27 10	2552	60 7 11	2560	61 47 1	2569
	α Aquilæ	W.	45 35 18	4245	46 43 2	4157	47 52 9	4080	49 2 30	4011
	α Arietis	E.	65 44 26	2672	64 7 9	2686	62 30 10	2698	60 53 28	2712
	Aldebaran	E.	95 57 2	2530	94 16 30	2538	92 36 10	2546	90 56 1	2555

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Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
10	Jupiter	W.	38° 14′ 35″	2693	39° 51′ 24″	2676	41° 28′ 36″	2659	43° 6′ 11″	2643
	Sun	E.	41 40 23	3021	40 10 36	3006	38 40 31	2991	37 10 7	2976
11	Pollux	W.	57 18 33	2535	58 58 57	2519	60 39 44	2502	62 20 54	2487
	Jupiter	W.	51 19 45	2560	52 59 35	2543	54 39 48	2527	56 20 23	2514
	Sun	E.	29 33 39	2911	28 1 34	2900	26 29 15	2891	24 56 44	2884
16	Sun	W.	36 52 7	2512	38 33 4	2510	40 14 3	2509	41 55 4	2508
	Saturn	E.	34 31 51	2191	32 43 10	2192	30 54 31	2194	29 5 55	2196
	α Aquilæ	E.	63 1 22	3148	61 34 11	3184	60 7 43	3223	58 42 1	3267
17	Sun	W.	50 19 58	2517	52 0 48	2520	53 41 33	2524	55 22 13	2527
	α Aquilæ	E.	51 48 6	3565	50 28 53	3644	49 11 6	3731	47 54 52	3827
	Fomalhaut	E.	78 41 20	2374	76 57 8	2381	75 13 6	2389	73 29 15	2396
	α Pegasi	E.	96 30 58	2600	94 52 3	2602	93 13 11	2606	91 34 24	2604
18	Sun	W.	63 43 57	2554	65 23 55	2561	67 3 44	2567	68 43 24	2574
	Antares	W.	21 18 25	2394	23 2 8	2378	24 46 14	2365	26 30 39	2357
	Fomalhaut	E.	64 53 19	2450	63 10 56	2465	61 28 53	2479	59 47 10	2494
	α Pegasi	E.	83 22 14	2645	81 44 20	2655	80 6 40	2666	78 29 15	2678
19	Sun	W.	76 59 13	2612	78 37 51	2621	80 16 18	2629	81 54 34	2637
	Antares	W.	35 14 24	2350	36 59 11	2353	38 43 54	2356	40 28 32	2359
	Mars	W.	26 52 51	2524	28 33 31	2531	30 14 1	2538	31 54 21	2545
	Fomalhaut	E.	51 24 36	2592	49 45 30	2616	48 6 57	2643	46 29 1	2672
	α Pegasi	E.	70 26 44	2756	68 51 19	2775	67 16 19	2797	65 41 47	2818
20	Sun	W.	90 2 59	2681	91 40 4	2689	93 16 58	2698	94 53 40	2708
	Antares	W.	49 10 3	2387	50 53 56	2394	52 37 40	2401	54 21 14	2407
	Mars	W.	40 13 19	2586	41 52 33	2595	43 31 35	2604	45 10 24	2612
	Fomalhaut	E.	38 30 13	2864	36 57 8	2916	35 25 9	2975	33 54 25	3042
	α Pegasi	E.	57 56 55	2955	56 25 46	2989	54 55 19	3025	53 25 37	3064
21	Sun	W.	102 54 2	2755	104 29 29	2764	106 4 44	2773	107 39 47	2783
	Antares	W.	62 56 30	2444	64 39 2	2453	66 21 22	2460	68 3 31	2468
	Mars	W.	53 21 34	2657	54 59 12	2666	56 36 38	2675	58 13 52	2684
	Saturn	W.	36 28 56	2441	38 11 32	2450	39 53 55	2459	41 36 6	2467
	α Pegasi	E.	46 10 23	3315	44 46 29	3380	43 23 50	3452	42 2 32	3530
	α Arietis	E.	85 31 48	2543	83 51 34	2552	82 11 33	2562	80 31 46	2572
22	Sun	W.	115 31 54	2830	117 5 43	2839	118 39 20	2849	120 12 44	2859
	Antares	W.	76 31 28	2509	78 12 29	2517	79 53 19	2525	81 33 57	2533
	Mars	W.	66 17 1	2729	67 53 3	2738	69 28 53	2747	71 4 31	2755
	Saturn	W.	50 4 7	2510	51 45 7	2518	53 25 55	2526	55 6 32	2535
	α Pegasi	E.	35 40 45	4084	34 30 28	4239	33 22 39	4417	32 17 33	4622
	α Arietis	E.	72 16 18	2624	70 37 56	2636	68 59 50	2648	67 22 0	2660
23	Sun	W.	127 56 38	2907	129 28 48	2917	131 0 45	2927	132 32 30	2936
	Antares	W.	89 54 16	2575	91 33 45	2583	93 13 3	2592	94 52 9	2601
	Mars	W.	78 59 46	2800	80 34 14	2808	82 8 31	2817	83 42 37	2827
	Saturn	W.	63 26 39	2577	65 6 5	2585	66 45 20	2594	68 24 23	2603
	α Aquilæ	W.	50 13 59	3948	51 26 30	3893	52 39 57	3843	53 54 15	3798
	α Arietis	E.	59 17 4	2727	57 41 0	2741	56 5 15	2757	54 29 51	2773
	Aldebaran	E.	89 16 4	2563	87 36 18	2572	85 56 45	2580	84 17 22	2589

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Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
24	Mars	W.	85° 16′ 30″	2836	86° 50′ 11″	2845	88° 23′ 41″	2853	89° 57′ 0″	2862
	Saturn	W.	70 3 14	2611	71 41 54	2619	73 20 23	2628	74 58 40	2637
	α Aquilæ	W.	55 9 19	3758	56 25 5	3721	57 41 30	3690	58 58 28	3661
	α Arietis	E.	52 54 48	2791	51 20 8	2809	49 45 52	2828	48 12 0	2848
	Aldebaran	E.	82 38 12	2597	80 59 13	2606	79 20 26	2615	77 41 51	2623
25	Mars	W.	97 40 43	2907	99 12 53	2916	100 44 52	2925	102 16 39	2934
	Saturn	W.	83 7 13	2679	84 44 21	2687	86 21 18	2696	87 58 3	2704
	α Aquilæ	W.	65 30 0	3558	66 49 20	3545	68 8 54	3535	69 28 40	3525
	α Arietis	E.	40 29 48	2973	38 59 2	3005	37 28 55	3039	35 59 31	3078
	Aldebaran	E.	69 31 48	2666	67 54 23	2675	66 17 9	2684	64 40 7	2692
	Jupiter	E.	120 51 24	2684	119 14 22	2692	117 37 31	2701	116 0 52	2708
26	Saturn	W.	95 58 59	2747	97 34 36	2756	99 10 1	2765	100 45 15	2774
	α Aquilæ	W.	76 9 38	3498	77 30 4	3497	78 50 31	3498	80 10 57	3500
	Fomalhaut	W.	41 13 8	3144	42 40 24	3128	44 8 0	3114	45 35 52	3102
	Aldebaran	E.	56 37 55	2738	55 2 5	2747	53 26 27	2756	51 51 1	2766
	Jupiter	E.	108 0 17	2750	106 24 43	2758	104 49 20	2767	103 14 9	2775
27	Saturn	W.	108 38 32	2818	110 12 37	2826	111 46 31	2835	113 20 13	2844
	α Aquilæ	W.	86 52 21	3522	88 12 21	3530	89 32 12	3538	90 51 54	3547
	Fomalhaut	W.	52 57 59	3071	54 26 44	3069	55 55 32	3068	57 24 21	3068
	α Pegasi	W.	39 36 20	3948	40 48 51	3885	42 2 26	3829	43 16 58	3780
	Aldebaran	E.	43 57 2	2814	42 22 52	2825	40 48 56	2835	39 15 13	2845
	Pollux	E.	88 5 18	2801	86 30 52	2810	84 56 37	2819	83 22 34	2828
	Jupiter	E.	95 20 55	2818	93 46 50	2826	92 12 56	2834	90 39 12	2843
28	α Aquilæ	W.	97 27 32	3608	98 45 58	3623	100 4 8	3638	101 22 1	3656
	Fomalhaut	W.	64 48 15	3075	66 16 55	3079	67 45 30	3083	69 14 0	3067
	α Pegasi	W.	49 40 48	3606	50 59 16	3582	52 18 10	3561	53 37 27	3542
	Aldebaran	E.	31 30 10	2902	29 57 54	2916	28 25 55	2929	26 54 13	2943
	Pollux	E.	75 35 5	2871	74 2 9	2880	72 29 24	2888	70 56 50	2897
	Jupiter	E.	82 53 22	2886	81 20 45	2894	79 48 18	2902	78 16 2	2911
29	Fomalhaut	W.	76 35 10	3112	78 3 5	3118	79 30 53	3124	80 58 33	3130
	α Pegasi	W.	60 18 11	3480	61 38 57	3472	62 59 52	3466	64 20 54	3460
	Pollux	E.	63 16 44	2939	61 45 15	2948	60 13 57	2956	58 42 49	2965
	Jupiter	E.	70 37 22	2951	69 6 8	2960	67 35 5	2968	66 4 12	2975
	Regulus	E.	99 16 39	2936	97 45 6	2945	96 13 44	2953	94 42 32	2960
30	Fomalhaut	W.	88 15 1	3163	89 41 55	3169	91 8 41	3176	92 35 19	3183
	α Pegasi	W.	71 7 17	3446	72 28 41	3445	73 50 7	3446	75 11 32	3446
	α Arietis	W.	27 36 29	3608	28 54 55	3559	30 14 14	3517	31 34 19	3480
	Pollux	E.	51 9 42	3004	49 39 34	3012	48 9 36	3019	46 39 47	3027
	Jupiter	E.	58 32 8	3013	57 2 11	3020	55 32 23	3026	54 2 43	3033
	Regulus	E.	87 8 51	2997	85 38 34	3003	84 8 25	3010	82 38 25	3017
	Venus	E.	116 51 6	3193	115 24 49	3200	113 58 40	3208	112 32 40	3214
31	α Pegasi	W.	81 58 23	3454	83 19 39	3456	84 40 52	3459	86 2 2	3463
	α Arietis	W.	38 23 10	3364	39 46 8	3349	41 9 23	3336	42 32 53	3324
	Pollux	E.	39 13 1	3063	37 44 6	3070	36 15 20	3078	34 46 43	3085
	Jupiter	E.	46 36 22	3064	45 7 28	3069	43 38 41	3074	42 10 0	3079
	Regulus	E.	75 10 21	3046	73 41 5	3052	72 11 56	3057	70 42 54	3062
	Venus	E.	105 24 33	3246	103 59 18	3251	102 34 9	3257	101 9 7	3262

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
24	Mars	W.	91° 30′ 7″	2871	93° 3′ 3″	2880	94° 35′ 48″	2889	96° 8′ 21″	2898
	Saturn	W.	76 36 45	2645	78 14 39	2653	79 52 22	2662	81 29 53	2670
	α Aquilæ	W.	60 15 57	3635	61 33 53	3612	62 52 14	3592	64 10 57	3574
	α Arietis	E.	46 38 34	2869	45 5 36	2893	43 33 8	2917	42 1 11	2944
	Aldebaran	E.	76 3 27	2632	74 25 15	2640	72 47 14	2649	71 9 25	2657
25	Mars	W.	103 48 15	2942	105 19 40	2952	106 50 53	2962	108 21 54	2969
	Saturn	W.	89 34 37	2713	91 10 59	2722	92 47 10	2730	94 23 10	2738
	α Aquilæ	W.	70 48 37	3516	72 8 43	3510	73 28 56	3505	74 49 15	3501
	α Arietis	E.	34 30 55	3121	33 3 11	3168	31 36 24	3221	30 10 40	3285
	Aldebaran	E.	63 3 16	2701	61 26 37	2710	59 50 11	2719	58 13 57	2729
	Jupiter	E.	114 24 23	2716	112 48 5	2725	111 11 58	2733	109 36 2	2741
26	Saturn	W.	102 20 17	2782	103 55 8	2792	105 29 47	2800	107 4 15	2808
	α Aquilæ	W.	81 31 21	3502	82 51 43	3506	84 12 1	3510	85 32 14	3515
	Fomalhaut	W.	47 3 59	3093	48 32 17	3086	50 0 44	3079	51 29 19	3075
	Aldebaran	E.	50 15 48	2775	48 40 47	2785	47 5 59	2795	45 31 24	2805
	Jupiter	E.	101 39 8	2783	100 4 18	2792	98 29 39	2800	96 55 11	2809
27	Saturn	W.	114 53 44	2852	116 27 4	2862	118 0 12	2870	119 33 9	2879
	α Aquilæ	W.	92 11 26	3557	93 30 47	3568	94 49 56	3581	96 8 51	3594
	Fomalhaut	W.	58 53 10	3068	60 21 59	3069	61 50 47	3071	63 19 32	3073
	α Pegasi	W.	44 32 21	3736	45 48 30	3696	47 5 21	3663	48 22 48	3632
	Aldebaran	E.	37 41 44	2856	36 8 29	2866	34 35 27	2879	33 2 41	2891
	Pollux	E.	81 48 42	2836	80 15 1	2845	78 41 31	2853	77 8 12	2862
	Jupiter	E.	89 5 40	2852	87 32 19	2860	85 59 9	2869	84 26 10	2877
28	α Aquilæ	W.	102 39 35	3675	103 56 49	3694	105 13 42	3715	106 30 13	3739
	Fomalhaut	W.	70 42 25	3091	72 10 46	3096	73 39 1	3101	75 7 9	3107
	α Pegasi	W.	54 57 5	3526	56 17 0	3513	57 37 10	3499	58 57 35	3489
	Aldebaran	E.	25 22 49	2959	23 51 45	2976	22 21 2	2994	20 50 42	3018
	Pollux	E.	69 24 27	2905	67 52 15	2914	66 20 14	2923	64 48 24	2931
	Jupiter	E.	76 43 57	2919	75 12 2	2927	73 40 18	2935	72 8 45	2944
29	Fomalhaut	W.	82 26 6	3137	83 53 31	3143	85 20 49	3149	86 47 59	3156
	α Pegasi	W.	65 42 3	3455	67 3 17	3453	68 24 34	3450	69 45 54	3447
	Pollux	E.	57 11 52	2973	55 41 5	2981	54 10 28	2988	52 40 0	2996
	Jupiter	E.	64 33 28	2983	63 2 54	2990	61 32 29	2998	60 2 14	3005
	Regulus	E.	93 11 29	2968	91 40 36	2975	90 9 52	2982	88 39 17	2989
30	Fomalhaut	W.	94 1 49	3189	95 28 11	3197	96 54 24	3204	98 20 29	3210
	α Pegasi	W.	76 32 57	3446	77 54 21	3448	79 15 43	3449	80 37 4	3451
	α Arietis	W.	32 55 5	3449	34 16 26	3423	35 38 17	3401	37 0 32	3381
	Pollux	E.	45 10 8	3034	43 40 38	3042	42 11 17	3049	40 42 5	3056
	Jupiter	E.	52 33 11	3039	51 3 47	3046	49 34 31	3052	48 5 23	3058
	Regulus	E.	81 8 33	3023	79 38 49	3029	78 9 12	3035	76 39 43	3041
	Venus	E.	111 6 47	3220	109 41 2	3227	108 15 25	3233	106 49 55	3940
31	α Pegasi	W.	87 23 8	3465	88 44 11	3469	90 5 10	3473	91 26 4	3477
	α Arietis	W.	43 56 37	3314	45 20 32	3305	46 44 38	3297	48 8 53	3289
	Pollux	E.	33 18 15	3092	31 49 56	3100	30 21 46	3107	28 53 45	3114
	Jupiter	E.	40 41 25	3085	39 12 57	3089	37 44 34	3094	36 16 17	3098
	Regulus	E.	69 13 58	3066	67 45 7	3070	66 16 21	3074	64 47 40	3078
	Venus	E.	99 44 11	3967	98 19 21	3272	96 54 37	3276	95 29 58	3280

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Wed.	1	14 24 59.15	9.790	S.14 23 19.8	-48.19	16 9.83	66.93	16 17.88	0.065
Thur.	2	14 28 54.52	9.825	14 42 29.9	47.62	16 10.07	67.05	16 19.06	0.031
Frid.	3	14 32 50.71	9.859	15 1 25.7	47.02	16 10.31	67.16	16 19.42	0.003
Sat.	4	14 36 47.73	9.894	15 20 6.8	46.40	16 10.55	67.27	16 18.97	0.038
Sun.	5	14 40 45.60	9.929	15 38 33.0	45.77	16 10.79	67.38	16 17.66	0.073
Mon.	6	14 44 44.32	9.965	15 56 43.8	45.12	16 11.02	67.50	16 15.50	0.109
Tues.	7	14 48 43.89	10.000	16 14 38.8	44.46	16 11.25	67.62	16 12.49	0.144
Wed.	8	14 52 44.32	10.035	16 32 17.4	43.77	16 11.48	67.74	16 8.63	0.179
Thur.	9	14 56 45.61	10.071	16 49 39.4	43.06	16 11.71	67.85	16 3.91	0.215
Frid.	10	15 0 47.76	10.107	17 6 44.6	42.34	16 11.93	67.97	15 58.33	0.251
Sat.	11	15 4 50.77	10.143	17 23 31.8	41.60	16 12.15	68.09	15 51.89	0.287
Sun.	12	15 8 54.65	10.179	17 40 1.4	40.84	16 12.37	68.21	15 44.58	0.323
Mon.	13	15 12 59.38	10.215	17 56 12.6	40.06	16 12.59	68.33	15 36.43	0.358
Tues.	14	15 17 4.95	10.250	18 12 5.0	39.28	16 12.81	68.44	15 27.45	0.393
Wed.	15	15 21 11.35	10.285	18 27 38.2	38.47	16 13.03	68.56	15 17.63	0.428
Thur.	16	15 25 18.59	10.319	18 42 51.9	37.65	16 13.24	68.68	15 6.97	0.462
Frid.	17	15 29 26.67	10.353	18 57 45.5	36.81	16 13.45	68.80	14 55.47	0.496
Sat.	18	15 33 35.58	10.387	19 12 18.7	35.95	16 13.66	68.91	14 43.15	0.530
Sun.	19	15 37 45.31	10.421	19 26 31.1	35.07	16 13.87	69.03	14 30.03	0.564
Mon.	20	15 41 55.84	10.454	19 40 22.4	34.18	16 14.07	69.15	14 16.11	0.597
Tues.	21	15 46 7.15	10.487	19 53 52.2	33.28	16 14.27	69.27	14 1.39	0.630
Wed.	22	15 50 19.25	10.520	20 7 0.0	32.36	16 14.46	69.39	13 45.89	0.663
Thur.	23	15 54 32.13	10.553	20 19 45.7	31.42	16 14.65	69.50	13 29.61	0.695
Frid.	24	15 58 45.78	10.585	20 32 8.8	30.48	16 14.84	69.61	13 12.56	0.727
Sat.	25	16 3 0.19	10.617	20 44 9.0	29.52	16 15.02	69.72	12 54.75	0.759
Sun.	26	16 7 15.36	10.648	20 55 45.8	28.53	16 15.20	69.82	12 36.19	0.790
Mon.	27	16 11 31.27	10.678	21 6 59.0	27.55	16 15.37	69.92	12 16.90	0.820
Tues.	28	16 15 47.89	10.708	21 17 48.5	26.55	16 15.53	70.01	11 56.89	0.850
Wed.	29	16 20 5.22	10.737	21 28 13.9	25.54	16 15.69	70.10	11 36.17	0.879
Thur.	30	16 24 23.25	10.766	21 38 14.8	24.52	16 15.84	70.19	11 14.76	0.907
Frid.	31	16 28 41.96	10.793	S.21 47 51.0	-23.48	16 15.99	70.27	10 52.66	0.934

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time, or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Wed.	1	14 25 1.81	9.791	S.14 23 32.9	–48.19	16 17.90	0.065	14 41 19.71
Thur.	2	14 28 57.19	9.825	14 42 42.8	47.61	16 19.07	0.031	14 45 16.26
Frid.	3	14 32 53.39	9.859	15 1 38.4	47.01	16 19.42	0.003	14 49 12.81
Sat.	4	14 36 50.42	9.894	15 20 19.4	46.39	16 18.95	0.038	14 53 9.37
Sun.	5	14 40 48.29	9.929	15 38 45.4	45.76	16 17.64	0.073	14 57 5.93
Mon.	6	14 44 47.01	9.965	15 56 55.9	45.11	16 15.47	0.109	15 1 2.48
Tues.	7	14 48 46.59	10.000	16 14 50.7	44.45	16 12.45	0.144	15 4 59.04
Wed.	8	14 52 47.02	10.035	16 32 29.1	43.76	16 8.57	0.179	15 8 55.59
Thur.	9	14 56 48.30	10.071	16 49 50.9	43.05	16 3.85	0.215	15 12 52.15
Frid.	10	15 0 50.44	10.107	17 6 55.7	42.33	15 58.26	0.251	15 16 48.70
Sat.	11	15 4 53.45	10.143	17 23 42.9	41.59	15 51.81	0.287	15 20 45.26
Sun.	12	15 8 57.32	10.179	17 40 12.1	40.83	15 44.49	0.323	15 24 41.81
Mon.	13	15 13 2.03	10.214	17 56 22.9	40.06	15 36.34	0.358	15 28 38.37
Tues.	14	15 17 7.58	10.249	18 12 15.0	39.27	15 27.35	0.393	15 32 34.93
Wed.	15	15 21 13.97	10.284	18 27 47.9	38.46	15 17.51	0.428	15 36 31.48
Thur.	16	15 25 21.19	10.318	18 43 1.2	37.64	15 6.85	0.462	15 40 28.04
Frid.	17	15 29 29.24	10.352	18 57 54.5	36.80	14 55.35	0.496	15 44 24.59
Sat.	18	15 33 38.12	10.386	19 12 27.4	35.94	14 43.03	0.530	15 48 21.15
Sun.	19	15 37 47.82	10.420	19 26 39.5	35.06	14 29.89	0.564	15 52 17.71
Mon.	20	15 41 58.31	10.453	19 40 30.4	34.17	14 15.95	0.597	15 56 14.26
Tues.	21	15 46 9.58	10.486	19 53 59.9	33.27	14 1.24	0.630	16 0 10.82
Wed.	22	15 50 21.65	10.519	20 7 7.4	32.35	13 45.73	0.663	16 4 7.38
Thur.	23	15 54 34.50	10.551	20 19 52.7	31.41	13 29.44	0.695	16 8 3.94
Frid.	24	15 58 48.10	10.583	20 32 15.4	30.47	13 12.39	0.727	16 12 0.49
Sat.	25	16 3 2.46	10.615	20 44 15.2	29.51	12 54.58	0.759	16 15 57.05
Sun.	26	16 7 17.58	10.646	20 55 51.7	28.53	12 36.02	0.790	16 19 53.61
Mon.	27	16 11 33.44	10.676	21 7 4.6	27.54	12 16.73	0.820	16 23 50.17
Tues.	28	16 15 50.00	10.706	21 17 53.8	26.54	11 56.72	0.850	16 27 46.72
Wed.	29	16 20 7.28	10.735	21 28 18.8	25.53	11 36.00	0.879	16 31 43.28
Thur.	30	16 24 25.25	10.763	21 38 19.3	24.51	11 14.59	0.907	16 35 39.84
Frid.	31	16 28 43.90	10.790	S.21 47 55.2	–23.47	10 52.49	0.934	16 39 36.39

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour $+9^{s}.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S							Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.		
		True LONGITUDE.					Diff. for 1 hour.	LATITUDE.					
		λ			λ′								
		°	′	″	′	″	″	″			h	m	s
1	305	218	38	52.3	38	28.8	150.20	+0.26	9.9964797	−45.7	9	17	8.77
2	306	219	38	58.0	38	34.4	150.28	0.40	.9963706	45.1	9	13	12.86
3	307	220	39	5.8	38	42.2	150.37	0.53	.9962630	44.5	9	9	16.95
4	308	221	39	15.8	38	52.0	150.46	0.63	.9961568	44.0	9	5	21.04
5	309	222	39	27.8	39	3.8	150.55	0.72	.9960518	43.5	9	1	25.13
6	310	223	39	41.8	39	17.6	150.63	0.79	.9959478	43.1	8	57	29.22
7	311	224	39	57.8	39	33.5	150.72	0.82	.9958448	42.7	8	53	33.31
8	312	225	40	15.9	39	51.5	150.80	0.82	.9957427	42.3	8	49	37.40
9	313	226	40	36.0	40	11.5	150.88	0.78	.9956414	41.9	8	45	41.49
10	314	227	40	58.0	40	33.3	150.95	0.72	.9955408	41.6	8	41	45.58
11	315	228	41	21.8	40	56.9	151.03	0.64	.9954411	41.2	8	37	49.67
12	316	229	41	47.4	41	22.4	151.10	0.54	.9953423	40.9	8	33	53.76
13	317	230	42	14.6	41	49.5	151.17	0.42	.9952442	40.6	8	29	57.85
14	318	231	42	43.3	42	18.0	151.23	0.30	.9951468	40.3	8	26	1.94
15	319	232	43	13.5	42	48.0	151.29	0.17	.9950502	39.9	8	22	6.03
16	320	233	43	45.2	43	19.5	151.35	+0.04	.9949546	39.5	8	18	10.12
17	321	234	44	18.3	43	52.5	151.41	−0.08	.9948601	39.0	8	14	14.21
18	322	235	44	52.6	44	26.7	151.46	0.18	.9947669	38.5	8	10	18.30
19	323	236	45	28.1	45	2.0	151.50	0.26	.9946751	37.9	8	6	22.39
20	324	237	46	4.8	45	38.5	151.55	0.31	.9945849	37.2	8	2	26.48
21	325	238	46	42.6	46	16.1	151.60	0.33	.9944963	36.5	7	58	30.57
22	326	239	47	21.5	46	54.9	151.65	0.32	.9944095	35.7	7	54	34.66
23	327	240	48	1.6	47	34.9	151.70	0.28	.9943247	34.9	7	50	38.75
24	328	241	48	42.9	48	16.0	151.75	0.20	.9942420	34.0	7	46	42.84
25	329	242	49	25.4	48	58.3	151.80	−0.10	.9941615	33.0	7	42	46.93
26	330	243	50	9.1	49	41.8	151.85	0.00	.9940833	32.0	7	38	51.02
27	331	244	50	54.0	50	26.6	151.90	+0.12	.9940075	31.0	7	34	55.11
28	332	245	51	40.2	51	12.7	151.95	0.25	.9939342	30.0	7	30	59.19
29	333	246	52	27.6	51	59.9	152.00	0.39	.9938634	29.0	7	27	3.28
30	334	247	53	16.3	52	48.4	152.06	0.52	.9937950	28.0	7	23	7.37
31	335	248	54	6.3	53	38.2	152.11	+0.63	9.9937289	−27.0	7	19	11.46

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour $-9^s.8296$

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 46.9	14 46.4	54 8.1	–0.23	54 6.4	–0.06	15 26.2	2.06	18.2
2	14 46.5	14 47.2	54 6.8	+0.13	54 9.4	+0.32	16 15.9	2.07	19.2
3	14 48.6	14 50.6	54 14.5	0.53	54 22.0	0.73	17 5.5	2.06	20.2
4	14 53.4	14 56.8	54 32.0	0.94	54 44.6	1.15	17 54.5	2.02	21.2
5	15 0.9	15 5.7	54 59.6	1.36	55 17.1	1.56	18 42.6	1.98	22.2
6	15 11.1	15 17.0	55 37.0	1.75	55 58.9	1.92	19 29.8	1.95	23.2
7	15 23.5	15 30.5	56 22.8	2.06	56 48.3	2.18	20 16.5	1.95	24.2
8	15 37.8	15 45.2	57 15.0	2.27	57 42.5	2.31	21 3.4	1.97	25.2
9	15 52.8	16 0.2	58 10.2	2.30	58 37.6	2.25	21 51.4	2.04	26.2
10	16 7.4	16 14.2	59 4.0	2.14	59 28.7	1.97	22 41.6	2.15	27.2
11	16 20.3	16 25.6	59 51.1	1.75	60 10.6	1.49	23 34.9	2.30	28.2
12	16 30.0	16 33.3	60 26.7	1.18	60 38.9	0.84	δ		29.2
13	16 35.5	16 36.5	60 47.0	+0.49	60 50.7	+0.13	0 32.1	2.67	0.8
14	16 36.3	16 35.0	60 50.2	–0.23	60 45.4	–0.57	1 33.1	2.61	1.8
15	16 32.7	16 29.4	60 36.7	0.88	60 24.5	1.15	2 36.4	2.66	2.8
16	16 25.2	16 20.4	60 9.3	1.38	59 51.6	1.56	3 39.8	2.61	3.8
17	16 15.1	16 9.4	59 32.0	1.70	59 11.0	1.78	4 40.9	2.46	4.8
18	16 3.4	15 57.4	58 49.3	1.83	58 27.2	1.84	5 37.9	2.28	5.8
19	15 51.4	15 45.5	58 5.2	1.82	57 43.6	1.78	6 30.5	2.10	6.8
20	15 39.8	15 34.3	57 22.6	1.72	57 2.4	1.64	7 19.1	1.96	7.8
21	15 29.1	15 24.1	56 43.2	1.56	56 25.0	1.47	8 4.8	1.86	8.8
22	15 19.5	15 15.1	56 7.8	1.38	55 51.7	1.29	8 48.7	1.80	9.8
23	15 11.0	15 7.2	55 36.7	1.20	55 22.8	1.12	9 31.7	1.79	10.8
24	15 3.7	15 0.5	55 9.9	1.03	54 58.1	0.94	10 14.9	1.82	11.8
25	14 57.5	14 54.9	54 47.3	0.86	54 37.5	0.77	10 59.1	1.87	12.8
26	14 52.4	14 50.4	54 28.7	0.69	54 20.9	0.60	11 44.8	1.94	13.8
27	14 48.6	14 47.0	54 14.3	0.51	54 8.7	0.41	12 32.1	2.01	14.8
28	14 45.8	14 45.0	54 4.4	0.31	54 1.3	–0.19	13 20.8	2.06	15.8
29	14 44.6	14 44.6	53 59.7	–0.07	53 59.7	+0.06	14 10.4	2.07	16.8
30	14 45.0	14 46.0	54 1.3	+0.21	54 4.7	0.36	15 0.1	2.06	17.8
31	14 47.4	14 49.4	54 10.1	+0.53	54 17.5	+0.70	15 49.1	2.02	18.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 36 57.78	2.1365	N.23 33 29.4	3.848
1	5 39 6.01	2.1379	23 37 17.0	3.737
2	5 41 14.33	2.1395	23 40 57.9	3.626
3	5 43 22.75	2.1411	23 44 32.1	3.515
4	5 45 31.26	2.1425	23 47 59.7	3.404
5	5 47 39.85	2.1439	23 51 20.6	3.293
6	5 49 48.52	2.1452	23 54 34.9	3.182
7	5 51 57.27	2.1465	23 57 42.5	3.070
8	5 54 6.10	2.1479	24 0 43.3	2.957
9	5 56 15.02	2.1493	24 3 37.3	2.843
10	5 58 24.01	2.1505	24 6 24.5	2.730
11	6 0 33.07	2.1516	24 9 4.9	2.618
12	6 2 42.20	2.1527	24 11 38.6	2.505
13	6 4 51.40	2.1539	24 14 5.5	2.391
14	6 7 0.67	2.1550	24 16 25.5	2.277
15	6 9 10.00	2.1560	24 18 38.7	2.163
16	6 11 19.39	2.1571	24 20 45.1	2.049
17	6 13 28.85	2.1580	24 22 44.6	1.934
18	6 15 38.36	2.1588	24 24 37.2	1.819
19	6 17 47.91	2.1596	24 26 22.9	1.704
20	6 19 57.52	2.1605	24 28 1.7	1.590
21	6 22 7.18	2.1613	24 29 33.7	1.476
22	6 24 16.88	2.1620	24 30 58.8	1.360
23	6 26 26.63	2.1628	N.24 32 16.9	1.244

THURSDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 28 36.42	2.1635	N.24 33 28.1	1.128
1	6 30 46.25	2.1641	24 34 32.4	1.013
2	6 32 56.11	2.1646	24 35 29.7	0.897
3	6 35 6.00	2.1652	24 36 20.0	0.781
4	6 37 15.93	2.1657	24 37 3.4	0.666
5	6 39 25.88	2.1661	24 37 39.8	0.549
6	6 41 35.86	2.1665	24 38 9.3	0.433
7	6 43 45.86	2.1669	24 38 31.8	0.317
8	6 45 55.88	2.1672	24 38 47.3	0.201
9	6 48 5.92	2.1674	24 38 55.9	+0.085
10	6 50 15.97	2.1676	24 38 57.5	−0.032
11	6 52 26.03	2.1678	24 38 52.1	0.149
12	6 54 36.10	2.1679	24 38 39.6	0.275
13	6 56 46.18	2.1681	24 38 20.1	0.382
14	6 58 56.27	2.1681	24 37 53.7	0.498
15	7 1 6.35	2.1680	24 37 20.4	0.614
16	7 3 16.43	2.1680	24 36 40.1	0.731
17	7 5 26.51	2.1679	24 35 52.7	0.848
18	7 7 36.58	2.1679	24 34 58.3	0.965
19	7 9 46.65	2.1677	24 33 56.9	1.081
20	7 11 56.70	2.1674	24 32 48.6	1.196
21	7 14 6.74	2.1671	24 31 33.4	1.312
22	7 16 16.75	2.1668	24 30 11.2	1.428
23	7 18 26.75	2.1665	24 28 42.0	1.545
24	7 20 36.73	2.1662	N.24 27 5.8	1.662

FRIDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 20 36.73	2.1662	N.24 27 5.8	1.662
1	7 22 46.69	2.1658	24 25 22.6	1.778
2	7 24 56.62	2.1653	24 23 32.5	1.893
3	7 27 6.52	2.1648	24 21 35.5	2.008
4	7 29 16.39	2.1643	24 19 31.5	2.124
5	7 31 26.23	2.1637	24 17 20.6	2.240
6	7 33 36.03	2.1630	24 15 2.7	2.356
7	7 35 45.79	2.1625	24 12 37.9	2.471
8	7 37 55.52	2.1617	24 10 6.2	2.586
9	7 40 5.20	2.1609	24 7 27.6	2.701
10	7 42 14.83	2.1601	24 4 42.1	2.816
11	7 44 24.42	2.1594	24 1 49.7	2.930
12	7 46 33.97	2.1586	23 58 50.5	3.044
13	7 48 43.46	2.1577	23 55 44.4	3.159
14	7 50 52.90	2.1568	23 52 31.4	3.273
15	7 53 2.28	2.1559	23 49 11.6	3.387
16	7 55 11.61	2.1550	23 45 45.0	3.500
17	7 57 20.89	2.1540	23 42 11.6	3.614
18	7 59 30.10	2.1529	23 38 31.3	3.728
19	8 1 39.24	2.1518	23 34 44.2	3.841
20	8 3 48.32	2.1508	23 30 50.4	3.953
21	8 5 57.34	2.1497	23 26 49.9	4.065
22	8 8 6.29	2.1486	23 22 42.6	4.177
23	8 10 15.17	2.1474	N.23 18 28.6	4.289

SATURDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 12 23.98	2.1463	N.23 14 7.9	4.401
1	8 14 32.72	2.1451	23 9 40.5	4.512
2	8 16 41.39	2.1439	23 5 6.4	4.624
3	8 18 49.98	2.1426	23 0 25.6	4.735
4	8 20 58.49	2.1413	22 55 38.2	4.845
5	8 23 6.93	2.1400	22 50 44.2	4.956
6	8 25 15.29	2.1386	22 45 43.5	5.067
7	8 27 23.56	2.1372	22 40 36.2	5.176
8	8 29 31.76	2.1359	22 35 22.4	5.285
9	8 31 39.87	2.1345	22 30 2.0	5.394
10	8 33 47.90	2.1331	22 24 35.1	5.502
11	8 35 55.85	2.1316	22 19 1.7	5.611
12	8 38 3.70	2.1301	22 13 21.8	5.719
13	8 40 11.47	2.1287	22 7 35.4	5.827
14	8 42 19.16	2.1273	22 1 42.6	5.934
15	8 44 26.75	2.1258	21 55 43.3	6.042
16	8 46 34.26	2.1244	21 49 37.6	6.148
17	8 48 41.68	2.1228	21 43 25.6	6.254
18	8 50 49.00	2.1213	21 37 7.2	6.360
19	8 52 56.24	2.1200	21 30 42.4	6.466
20	8 55 3.39	2.1184	21 24 11.3	6.570
21	8 57 10.44	2.1169	21 17 34.0	6.674
22	8 59 17.41	2.1153	21 10 50.4	6.779
23	9 1 24.27	2.1137	21 4 0.5	6.883
24	9 3 31.05	2.1121	N.20 57 4.4	6.987

GREENWICH MEAN TIME

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 3 31.05	2.1121	N.20 57 4.4	6.987
1	9 5 37.73	2.1105	20 50 2.1	7.090
2	9 7 44.32	2.1090	20 42 53.6	7.192
3	9 9 50.81	2.1075	20 35 39.0	7.294
4	9 11 57.22	2.1060	20 28 18.3	7.396
5	9 14 3.53	2.1044	20 20 51.5	7.497
6	9 16 9.75	2.1028	20 13 18.7	7.598
7	9 18 15.87	2.1012	20 5 39.8	7.699
8	9 20 21.90	2.0997	19 57 54.8	7.800
9	9 22 27.84	2.0982	19 50 3.8	7.899
10	9 24 33.69	2.0967	19 42 6.9	7.998
11	9 26 39.45	2.0952	19 34 4.1	8.096
12	9 28 45.11	2.0936	19 25 55.4	8.194
13	9 30 50.67	2.0920	19 17 40.8	8.292
14	9 32 56.15	2.0907	19 9 20.4	8.389
15	9 35 1.55	2.0893	19 0 54.1	8.487
16	9 37 6.86	2.0877	18 52 22.0	8.583
17	9 39 12.07	2.0860	18 43 44.2	8.678
18	9 41 17.19	2.0845	18 35 0.7	8.772
19	9 43 22.22	2.0831	18 26 11.5	8.867
20	9 45 27.17	2.0818	18 17 16.7	8.961
21	9 47 32.04	2.0804	18 8 16.2	9.055
22	9 49 36.82	2.0789	17 59 10.1	9.148
23	9 51 41.51	2.0776	N.17 49 58.4	9.241

MONDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 53 46.13	2.0763	N.17 40 41.2	9.333
1	9 55 50.67	2.0749	17 31 18.5	9.424
2	9 57 55.12	2.0735	17 21 50.3	9.515
3	9 59 59.49	2.0722	17 12 16.7	9.605
4	10 2 3.78	2.0709	17 2 37.7	9.695
5	10 4 8.00	2.0698	16 52 53.3	9.785
6	10 6 12.15	2.0686	16 43 3.5	9.874
7	10 8 16.23	2.0674	16 33 8.4	9.962
8	10 10 20.23	2.0662	16 23 8.1	10.048
9	10 12 24.16	2.0650	16 13 2.6	10.135
10	10 14 28.02	2.0638	16 2 51.9	10.222
11	10 16 31.81	2.0626	15 52 36.0	10.308
12	10 18 35.53	2.0616	15 42 14.9	10.394
13	10 20 39.20	2.0605	15 31 48.7	10.478
14	10 22 42.80	2.0595	15 21 17.5	10.562
15	10 24 46.34	2.0585	15 10 41.3	10.645
16	10 26 49.82	2.0576	15 0 0.1	10.728
17	10 28 53.26	2.0568	14 49 14.0	10.810
18	10 30 56.64	2.0559	14 38 22.9	10.892
19	10 32 59.97	2.0550	14 27 26.9	10.973
20	10 35 3.25	2.0542	14 16 26.1	11.053
21	10 37 6.48	2.0534	14 5 20.6	11.132
22	10 39 9.66	2.0526	13 54 10.3	11.211
23	10 41 12.79	2.0518	13 42 55.3	11.289
24	10 43 15.88	2.0512	N.13 31 35.6	11.367

TUESDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 43 15.88	2.0512	N.13 31 35.6	11.367
1	10 45 18.94	2.0507	13 20 11.3	11.444
2	10 47 21.96	2.0501	13 8 42.4	11.521
3	10 49 24.95	2.0496	12 57 8.8	11.597
4	10 51 27.91	2.0491	12 45 30.7	11.672
5	10 53 30.84	2.0486	12 33 48.2	11.745
6	10 55 33.74	2.0482	12 22 1.3	11.818
7	10 57 36.62	2.0478	12 10 10.0	11.891
8	10 59 39.48	2.0475	11 58 14.4	11.963
9	11 1 42.32	2.0472	11 46 14.5	12.034
10	11 3 45.14	2.0469	11 34 10.3	12.106
11	11 5 47.95	2.0467	11 22 1.8	12.177
12	11 7 50.75	2.0466	11 9 49.1	12.246
13	11 9 53.54	2.0465	10 57 32.3	12.313
14	11 11 56.33	2.0465	10 45 11.5	12.380
15	11 13 59.12	2.0465	10 32 46.7	12.447
16	11 16 1.91	2.0465	10 20 17.9	12.513
17	11 18 4.70	2.0466	10 7 45.1	12.579
18	11 20 7.50	2.0467	9 55 8.4	12.643
19	11 22 10.31	2.0470	9 42 27.9	12.707
20	11 24 13.14	2.0473	9 29 43.6	12.770
21	11 26 15.99	2.0476	9 16 55.5	12.832
22	11 28 18.85	2.0479	9 4 3.7	12.893
23	11 30 21.73	2.0483	N. 8 51 8.3	12.953

WEDNESDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 32 24.64	2.0488	N. 8 38 9.4	13.012
1	11 34 27.58	2.0493	8 25 6.9	13.071
2	11 36 30.56	2.0499	8 12 0.9	13.129
3	11 38 33.57	2.0505	7 58 51.4	13.187
4	11 40 36.62	2.0512	7 45 38.5	13.243
5	11 42 39.72	2.0520	7 32 22.3	13.297
6	11 44 42.86	2.0528	7 19 2.9	13.351
7	11 46 46.05	2.0536	7 5 40.2	13.405
8	11 48 49.29	2.0545	6 52 14.3	13.457
9	11 50 52.59	2.0556	6 38 45.3	13.508
10	11 52 55.96	2.0566	6 25 13.3	13.559
11	11 54 59.39	2.0576	6 11 38.2	13.609
12	11 57 2.88	2.0588	5 58 0.2	13.658
13	11 59 6.45	2.0600	5 44 19.3	13.705
14	12 1 10.09	2.0613	5 30 35.6	13.751
15	12 3 13.81	2.0627	5 16 49.2	13.797
16	12 5 17.62	2.0641	5 3 0.0	13.843
17	12 7 21.51	2.0656	4 49 8.1	13.887
18	12 9 25.49	2.0671	4 35 13.6	13.929
19	12 11 29.56	2.0688	4 21 16.6	13.970
20	12 13 33.74	2.0704	4 7 17.2	14.010
21	12 15 38.01	2.0720	3 53 15.4	14.049
22	12 17 42.38	2.0738	3 39 11.3	14.088
23	12 19 46.87	2.0757	3 25 4.9	14.126
24	12 21 51.47	2.0777	N. 3 10 56.2	14.162

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 21 51.47	2.0777	N. 3 10 56.2	14.162
1	12 23 56.19	2.0797	2 56 45.4	14.197
2	12 26 1.03	2.0816	2 42 32.6	14.230
3	12 28 5.98	2.0837	2 28 17.8	14.263
4	12 30 11.08	2.0860	2 14 1.0	14.296
5	12 32 16.31	2.0881	1 59 42.3	14.327
6	12 34 21.66	2.0905	1 45 21.8	14.356
7	12 36 27.16	2.0929	1 30 59.6	14.384
8	12 38 32.81	2.0954	1 16 35.7	14.411
9	12 40 38.61	2.0978	1 2 10.3	14.436
10	12 42 44.55	2.1004	0 47 43.4	14.461
11	12 44 50.65	2.1031	0 33 15.0	14.484
12	12 46 56.92	2.1058	0 18 45.3	14.506
13	12 49 3.35	2.1086	N. 0 4 14.3	14.527
14	12 51 9.95	2.1114	S. 0 10 17.9	14.547
15	12 53 16.72	2.1144	0 24 51.3	14.565
16	12 55 23.67	2.1174	0 39 25.7	14.582
17	12 57 30.80	2.1204	0 54 1.1	14.598
18	12 59 38.11	2.1234	1 8 37.4	14.612
19	13 1 45.61	2.1266	1 23 14.5	14.624
20	13 3 53.30	2.1299	1 37 52.3	14.636
21	13 6 1.20	2.1333	1 52 30.8	14.646
22	13 8 9.30	2.1366	2 7 9.8	14.654
23	13 10 17.59	2.1400	S. 2 21 49.3	14.662

FRIDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 12 26.10	2.1436	S. 2 36 29.2	14.668
1	13 14 34.82	2.1472	2 51 9.4	14.673
2	13 16 43.76	2.1508	3 5 49.9	14.676
3	13 18 52.92	2.1545	3 20 30.5	14.677
4	13 21 2.30	2.1583	3 35 11.1	14.677
5	13 23 11.91	2.1622	3 49 51.7	14.676
6	13 25 21.77	2.1662	4 4 32.2	14.673
7	13 27 31.86	2.1702	4 19 12.4	14.668
8	13 29 42.19	2.1742	4 33 52.3	14.663
9	13 31 52.76	2.1783	4 48 31.9	14.656
10	13 34 3.58	2.1824	5 3 11.0	14.647
11	13 36 14.65	2.1866	5 17 49.5	14.636
12	13 38 25.98	2.1910	5 32 27.3	14.623
13	13 40 37.58	2.1955	5 47 4.3	14.609
14	13 42 49.44	2.1999	6 1 40.4	14.594
15	13 45 1.57	2.2044	6 16 15.6	14.577
16	13 47 13.97	2.2089	6 30 49.7	14.558
17	13 49 26.64	2.2135	6 45 22.6	14.537
18	13 51 39.59	2.2183	6 59 54.2	14.515
19	13 53 52.83	2.2231	7 14 24.4	14.492
20	13 56 6.36	2.2279	7 28 53.2	14.467
21	13 58 20.18	2.2327	7 43 20.4	14.440
22	14 0 34.29	2.2376	7 57 46.0	14.412
23	14 2 48.70	2.2426	8 12 9.8	14.381
24	14 5 3.40	2.2477	S. 8 26 31.7	14.348

SATURDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 5 3.40	2.2477	S. 8 26 31.7	14.346
1	14 7 18.42	2.2528	8 40 51.6	14.314
2	14 9 33.74	2.2579	8 55 9.4	14.278
3	14 11 49.37	2.2631	9 9 25.0	14.241
4	14 14 5.31	2.2684	9 23 38.3	14.202
5	14 16 21.57	2.2738	9 37 49.2	14.161
6	14 18 38.16	2.2792	9 51 57.6	14.118
7	14 20 55.07	2.2846	10 6 3.3	14.073
8	14 23 12.30	2.2900	10 20 6.3	14.026
9	14 25 29.86	2.2954	10 34 6.4	13.977
10	14 27 47.75	2.3010	10 48 3.6	13.927
11	14 30 5.98	2.3066	11 1 57.7	13.875
12	14 32 24.54	2.3122	11 15 48.6	13.821
13	14 34 43.45	2.3180	11 29 36.2	13.765
14	14 37 2.70	2.3237	11 43 20.4	13.707
15	14 39 22.29	2.3294	11 57 1.0	13.647
16	14 41 42.23	2.3352	12 10 38.0	13.586
17	14 44 2.51	2.3410	12 24 11.3	13.523
18	14 46 23.15	2.3470	12 37 40.7	13.457
19	14 48 44.15	2.3529	12 51 6.1	13.389
20	14 51 5.50	2.3588	13 4 27.4	13.320
21	14 53 27.21	2.3648	13 17 44.5	13.249
22	14 55 49.28	2.3708	13 30 57.3	13.176
23	14 58 11.70	2.3768	S. 13 44 5.6	13.100

SUNDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 0 34.49	2.3828	S. 13 57 9.3	13.022
1	15 2 57.64	2.3890	14 10 8.3	12.944
2	15 5 21.16	2.3950	14 23 2.6	12.864
3	15 7 45.04	2.4011	14 35 52.0	12.781
4	15 10 9.29	2.4071	14 48 36.3	12.695
5	15 12 33.90	2.4133	15 1 15.4	12.607
6	15 14 58.89	2.4196	15 13 49.2	12.518
7	15 17 24.25	2.4257	15 26 17.6	12.427
8	15 19 49.97	2.4318	15 38 40.5	12.335
9	15 22 16.06	2.4380	15 50 57.8	12.241
10	15 24 42.52	2.4441	16 3 9.4	12.144
11	15 27 9.35	2.4502	16 15 15.1	12.045
12	15 29 36.55	2.4564	16 27 14.8	11.944
13	15 32 4.12	2.4626	16 39 8.4	11.842
14	15 34 32.06	2.4688	16 50 55.8	11.738
15	15 37 0.37	2.4749	17 2 36.9	11.631
16	15 39 29.05	2.4810	17 14 11.5	11.522
17	15 41 58.09	2.4870	17 25 39.6	11.412
18	15 44 27.50	2.4932	17 37 1.0	11.300
19	15 46 57.28	2.4993	17 48 15.6	11.187
20	15 49 27.42	2.5053	17 59 23.4	11.071
21	15 51 57.92	2.5112	18 10 24.2	10.953
22	15 54 28.77	2.5172	18 21 17.8	10.832
23	15 56 59.98	2.5232	18 32 4.1	10.711
24	15 59 31.55	2.5291	S. 18 42 43.1	10.588

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 59 31.55	2.5291	S. 18 42 43.1	10.588
1	16 2 3.47	2.5350	18 53 14.6	10.462
2	16 4 35.75	2.5409	19 3 38.5	10.335
3	16 7 8.37	2.5466	19 13 54.8	10.207
4	16 9 41.34	2.5523	19 24 3.3	10.076
5	16 12 14.65	2.5580	19 34 3.9	9.943
6	16 14 48.30	2.5636	19 43 56.5	9.809
7	16 17 22.28	2.5692	19 53 41.0	9.673
8	16 19 56.60	2.5747	20 3 17.3	9.536
9	16 22 31.24	2.5800	20 12 45.3	9.396
10	16 25 6.20	2.5854	20 22 4.8	9.254
11	16 27 41.49	2.5907	20 31 15.8	9.112
12	16 30 17.09	2.5959	20 40 18.2	8.968
13	16 32 53.00	2.6011	20 49 11.9	8.822
14	16 35 29.22	2.6061	20 57 56.8	8.674
15	16 38 5.74	2.6111	21 6 32.8	8.525
16	16 40 42.56	2.6160	21 14 59.8	8.374
17	16 43 19.66	2.6208	21 23 17.7	8.222
18	16 45 57.05	2.6254	21 31 26.4	8.068
19	16 48 34.71	2.6300	21 39 25.9	7.913
20	16 51 12.66	2.6346	21 47 16.0	7.757
21	16 53 50.87	2.6390	21 54 56.7	7.599
22	16 56 29.34	2.6433	22 2 27.9	7.440
23	16 59 8.06	2.6474	S. 22 9 49.5	7.279

TUESDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 1 47.03	2.6515	S. 22 17 1.4	7.117
1	17 4 26.24	2.6555	22 24 3.5	6.954
2	17 7 5.69	2.6593	22 30 55.8	6.790
3	17 9 45.36	2.6630	22 37 38.3	6.625
4	17 12 25.25	2.6667	22 44 10.8	6.458
5	17 15 5.36	2.6701	22 50 33.2	6.289
6	17 17 45.67	2.6733	22 56 45.5	6.120
7	17 20 26.17	2.6766	23 2 47.6	5.950
8	17 23 6.86	2.6797	23 8 39.5	5.780
9	17 25 47.73	2.6826	23 14 21.2	5.608
10	17 28 28.77	2.6854	23 19 52.5	5.435
11	17 31 9.98	2.6882	23 25 13.4	5.261
12	17 33 51.35	2.6907	23 30 23.8	5.086
13	17 36 32.86	2.6930	23 35 23.7	4.911
14	17 39 14.50	2.6952	23 40 13.1	4.735
15	17 41 56.28	2.6973	23 44 51.9	4.558
16	17 44 38.18	2.6993	23 49 20.1	4.381
17	17 47 20.19	2.7010	23 53 37.6	4.202
18	17 50 2.30	2.7026	23 57 44.3	4.023
19	17 52 44.50	2.7041	24 1 40.3	3.844
20	17 55 26.79	2.7054	24 5 25.6	3.665
21	17 58 9.15	2.7065	24 9 0.1	3.484
22	18 0 51.57	2.7075	24 12 23.7	3.303
23	18 3 34.05	2.7084	24 15 36.5	3.122
24	18 6 16.58	2.7090	S. 24 18 38.4	2.941

WEDNESDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 6 16.58	2.7090	S. 24 18 38.4	2.941
1	18 8 59.14	2.7095	24 21 29.4	2.759
2	18 11 41.72	2.7098	24 24 9.5	2.577
3	18 14 24.32	2.7100	24 26 38.6	2.394
4	18 17 6.93	2.7101	24 28 56.8	2.212
5	18 19 49.54	2.7100	24 31 4.1	2.030
6	18 22 32.13	2.7096	24 33 0.4	1.847
7	18 25 14.69	2.7090	24 34 45.8	1.665
8	18 27 57.22	2.7085	24 36 20.2	1.482
9	18 30 39.71	2.7078	24 37 43.6	1.299
10	18 33 22.16	2.7068	24 38 56.1	1.117
11	18 36 4.53	2.7056	24 39 57.7	0.935
12	18 38 46.83	2.7043	24 40 48.3	0.753
13	18 41 29.05	2.7029	24 41 28.0	0.571
14	18 44 11.18	2.7012	24 41 56.8	0.389
15	18 46 53.20	2.6994	24 42 14.7	0.208
16	18 49 35.11	2.6976	24 42 21.8	−0.027
17	18 52 16.91	2.6955	24 42 18.0	+0.153
18	18 54 58.57	2.6932	24 42 3.4	0.333
19	18 57 40.09	2.6908	24 41 38.0	0.513
20	19 0 21.46	2.6882	24 41 1.9	0.692
21	19 3 2.68	2.6855	24 40 15.0	0.871
22	19 5 43.73	2.6826	24 39 17.4	1.048
23	19 8 24.60	2.6796	S. 24 38 9.2	1.225

THURSDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 11 5.29	2.6765	S. 24 36 50.4	1.402
1	19 13 45.78	2.6732	24 35 21.0	1.578
2	19 16 26.07	2.6698	24 33 41.1	1.753
3	19 19 6.15	2.6661	24 31 50.7	1.928
4	19 21 46.00	2.6623	24 29 49.8	2.101
5	19 24 25.62	2.6584	24 27 38.6	2.273
6	19 27 5.01	2.6544	24 25 17.1	2.444
7	19 29 44.15	2.6503	24 22 45.3	2.616
8	19 32 23.04	2.6461	24 20 3.2	2.787
9	19 35 1.68	2.6418	24 17 10.9	2.956
10	19 37 40.05	2.6373	24 14 8.5	3.123
11	19 40 18.15	2.6326	24 10 56.1	3.289
12	19 42 55.97	2.6278	24 7 33.8	3.454
13	19 45 33.49	2.6228	24 4 1.6	3.619
14	19 48 10.71	2.6178	24 0 19.5	3.783
15	19 50 47.63	2.6127	23 56 27.6	3.946
16	19 53 24.24	2.6076	23 52 26.0	4.107
17	19 56 0.54	2.6023	23 48 14.7	4.267
18	19 58 36.52	2.5969	23 43 53.9	4.426
19	20 1 12.17	2.5914	23 39 23.6	4.583
20	20 3 47.48	2.5857	23 34 43.9	4.740
21	20 6 22.45	2.5800	23 29 54.8	4.895
22	20 8 57.08	2.5743	23 24 56.5	5.048
23	20 11 31.36	2.5684	23 19 49.0	5.201
24	20 14 5.28	2.5623	S. 23 14 32.4	5.352

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 17.					SUNDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	20 14 5.28	2.5623	S. 23 14 32.4	5.352	0	22 9 23.11	2.2381	S. 16 31 45.1	10.844
1	20 16 38.84	2.5562	23 9 6.8	5.501	1	22 11 37.20	2.2316	16 20 52.1	10.922
2	20 19 12.03	2.5502	23 3 32.3	5.649	2	22 13 50.90	2.2251	16 9 54.5	10.998
3	20 21 44.86	2.5440	22 57 48.9	5.797	3	22 16 4.21	2.2187	15 58 52.3	11.073
4	20 24 17.31	2.5378	22 51 56.7	5.943	4	22 18 17.14	2.2123	15 47 45.7	11.147
5	20 26 49.39	2.5315	22 45 55.8	6.087	5	22 20 29.69	2.2061	15 36 34.7	11.218
6	20 29 21.09	2.5252	22 39 46.3	6.229	6	22 22 41.87	2.1998	15 25 19.5	11.288
7	20 31 52.41	2.5187	22 33 28.3	6.370	7	22 24 53.67	2.1936	15 14 0.1	11.357
8	20 34 23.33	2.5120	22 27 1.9	6.510	8	22 27 5.10	2.1875	15 2 36.6	11.425
9	20 36 53.86	2.5056	22 20 27.1	6.648	9	22 29 16.16	2.1813	14 51 9.1	11.491
10	20 39 24.00	2.4990	22 13 44.1	6.785	10	22 31 26.86	2.1753	14 39 37.7	11.556
11	20 41 53.74	2.4924	22 6 52.9	6.920	11	22 33 37.19	2.1693	14 28 2.4	11.620
12	20 44 23.08	2.4856	21 59 53.7	7.053	12	22 35 47.17	2.1633	14 16 23.3	11.682
13	20 46 52.02	2.4789	21 52 46.5	7.186	13	22 37 56.79	2.1574	14 4 40.5	11.743
14	20 49 20.55	2.4721	21 45 31.4	7.317	14	22 40 6.06	2.1517	13 52 54.1	11.802
15	20 51 48.67	2.4653	21 38 8.5	7.446	15	22 42 14.99	2.1459	13 41 4.3	11.859
16	20 54 16.38	2.4584	21 30 37.9	7.573	16	22 44 23.57	2.1402	13 29 11.0	11.917
17	20 56 43.68	2.4516	21 22 59.7	7.700	17	22 46 31.81	2.1345	13 17 14.3	11.973
18	20 59 10.57	2.4447	21 15 13.9	7.825	18	22 48 39.71	2.1289	13 5 14.3	12.027
19	21 1 37.04	2.4376	21 7 20.7	7.948	19	22 50 47.28	2.1233	12 53 11.1	12.080
20	21 4 3.09	2.4306	20 59 20.2	8.068	20	22 52 54.51	2.1179	12 41 4.7	12.132
21	21 6 28.72	2.4237	20 51 12.5	8.188	21	22 55 1.42	2.1125	12 28 55.2	12.183
22	21 8 53.93	2.4168	20 42 57.6	8.307	22	22 57 8.01	2.1071	12 16 42.7	12.231
23	21 11 18.73	2.4098	S. 20 34 35.6	8.424	23	22 59 14.28	2.1018	S. 12 4 27.4	12.278
	SATURDAY 18.					MONDAY 20.			
0	21 13 43.11	2.4028	S. 20 26 6.7	8.539	0	23 1 20.23	2.0966	S. 11 52 9.3	12.325
1	21 16 7.07	2.3958	20 17 30.9	8.653	1	23 3 25.87	2.0915	11 39 48.4	12.372
2	21 18 30.60	2.3887	20 8 48.3	8.765	2	23 5 31.21	2.0865	11 27 24.7	12.417
3	21 20 53.71	2.3817	19 59 59.1	8.875	3	23 7 36.25	2.0816	11 14 58.4	12.460
4	21 23 16.41	2.3748	19 51 3.3	8.984	4	23 9 41.00	2.0766	11 2 29.5	12.502
5	21 25 38.69	2.3679	19 42 1.0	9.092	5	23 11 45.44	2.0716	10 49 58.2	12.541
6	21 28 0.55	2.3608	19 32 52.3	9.198	6	23 13 49.59	2.0667	10 37 24.6	12.580
7	21 30 21.99	2.3537	19 23 37.3	9.302	7	23 15 53.46	2.0620	10 24 48.6	12.619
8	21 32 43.00	2.3467	19 14 16.1	9.405	8	23 17 57.04	2.0574	10 12 10.3	12.657
9	21 35 3.59	2.3398	19 4 48.7	9.507	9	23 20 0.35	2.0528	9 59 29.8	12.693
10	21 37 23.77	2.3328	18 55 15.3	9.607	10	23 22 3.38	2.0483	9 46 47.2	12.728
11	21 39 43.53	2.3258	18 45 35.9	9.705	11	23 24 6.14	2.0439	9 34 2.5	12.763
12	21 42 2.87	2.3189	18 35 50.7	9.802	12	23 26 8.64	2.0395	9 21 15.7	12.796
13	21 44 21.80	2.3120	18 25 59.7	9.897	13	23 28 10.88	2.0351	9 8 27.0	12.827
14	21 46 40.32	2.3051	18 16 3.1	9.990	14	23 30 12.86	2.0308	8 55 36.5	12.856
15	21 48 58.42	2.2983	18 6 0.9	10.082	15	23 32 14.58	2.0267	8 42 44.3	12.884
16	21 51 16.11	2.2915	17 55 53.2	10.173	16	23 34 16.06	2.0226	8 29 50.4	12.912
17	21 53 33.40	2.2847	17 45 40.1	10.262	17	23 36 17.29	2.0186	8 16 54.8	12.941
18	21 55 50.28	2.2779	17 35 21.7	10.350	18	23 38 18.29	2.0147	8 3 57.5	12.968
19	21 58 6.75	2.2712	17 24 58.1	10.436	19	23 40 19.05	2.0106	7 50 58.7	12.993
20	22 0 22.82	2.2645	17 14 29.4	10.520	20	23 42 19.57	2.0068	7 37 58.4	13.017
21	22 2 38.49	2.2578	17 3 55.7	10.603	21	23 44 19.87	2.0032	7 24 56.7	13.039
22	22 4 53.76	2.2512	16 53 17.0	10.686	22	23 46 19.95	1.9994	7 11 53.7	13.061
23	22 7 8.63	2.2446	16 42 33.4	10.766	23	23 48 19.80	1.9958	6 58 49.4	13.082
24	22 9 23.11	2.2381	S. 16 31 45.1	10.844	24	23 50 19.44	1.9922	S. 6 45 43.8	13.102

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 21.					THURSDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	23 50 19.44	1.9922	S. 6 45 43.8	13.102	0	1 23 12.94	1.9042	N. 3 47 50.8	12.954
1	23 52 18.87	1.9889	6 32 37.1	13.121	1	1 25 7.19	1.9040	4 0 47.3	12.929
2	23 54 18.10	1.9854	6 19 29.3	13.138	2	1 27 1.42	1.9038	4 13 42.3	12.904
3	23 56 17.12	1.9821	6 6 20.5	13.155	3	1 28 55.65	1.9037	4 26 35.8	12.879
4	23 58 15.95	1.9789	5 53 10.7	13.171	4	1 30 49.87	1.9037	4 39 27.8	12.853
5	0 0 14.59	1.9757	5 40 0.0	13.185	5	1 32 44.09	1.9037	4 52 18.2	12.826
6	0 2 13.04	1.9725	5 26 48.5	13.198	6	1 34 38.32	1.9039	5 5 6.9	12.797
7	0 4 11.29	1.9695	5 13 36.2	13.212	7	1 36 32.56	1.9039	5 17 53.9	12.768
8	0 6 9.38	1.9666	5 0 23.1	13.224	8	1 38 26.79	1.9040	5 30 39.1	12.738
9	0 8 7.29	1.9637	4 47 9.3	13.235	9	1 40 21.04	1.9043	5 43 22.4	12.707
10	0 10 5.02	1.9607	4 33 54.9	13.245	10	1 42 15.31	1.9047	5 56 3.9	12.676
11	0 12 2.58	1.9580	4 20 39.9	13.254	11	1 44 9.60	1.9049	6 8 43.5	12.643
12	0 13 59.99	1.9554	4 7 24.4	13.262	12	1 46 3.90	1.9052	6 21 21.1	12.610
13	0 15 57.24	1.9528	3 54 8.5	13.268	13	1 47 58.23	1.9057	6 33 56.7	12.577
14	0 17 54.33	1.9503	3 40 52.2	13.274	14	1 49 52.60	1.9063	6 46 30.3	12.542
15	0 19 51.28	1.9478	3 27 35.6	13.279	15	1 51 47.00	1.9069	6 59 1.8	12.507
16	0 21 48.07	1.9454	3 14 18.7	13.284	16	1 53 41.43	1.9075	7 11 31.1	12.470
17	0 23 44.72	1.9431	3 1 1.5	13.288	17	1 55 35.90	1.9081	7 23 58.2	12.433
18	0 25 41.24	1.9409	2 47 44.1	13.291	18	1 57 30.41	1.9089	7 36 23.1	12.396
19	0 27 37.62	1.9386	2 34 26.6	13.292	19	1 59 24.97	1.9097	7 48 45.7	12.357
20	0 29 33.87	1.9365	2 21 9.1	13.292	20	2 1 19.58	1.9105	8 1 5.9	12.317
21	0 31 30.00	1.9345	2 7 51.6	13.291	21	2 3 14.24	1.9114	8 13 23.7	12.277
22	0 33 26.01	1.9325	1 54 34.2	13.290	22	2 5 8.95	1.9123	8 25 39.1	12.237
23	0 35 21.90	1.9305	S. 1 41 16.8	13.288	23	2 7 3.72	1.9133	N. 8 37 52.1	12.196
	WEDNESDAY 22.					FRIDAY 24.			
0	0 37 17.67	1.9287	S. 1 27 59.6	13.285	0	2 8 58.55	1.9144	N. 8 50 2.6	12.153
1	0 39 13.34	1.9269	1 14 42.6	13.281	1	2 10 53.44	1.9155	9 2 10.5	12.109
2	0 41 8.90	1.9252	1 1 25.9	13.276	2	2 12 48.40	1.9166	9 14 15.7	12.064
3	0 43 4.37	1.9236	0 48 9.5	13.270	3	2 14 43.43	1.9178	9 26 18.2	12.019
4	0 44 59.74	1.9220	0 34 53.5	13.263	4	2 16 38.53	1.9190	9 38 18.0	11.974
5	0 46 55.01	1.9205	0 21 37.9	13.256	5	2 18 33.71	1.9203	9 50 15.1	11.928
6	0 48 50.20	1.9191	S. 0 8 22.8	13.248	6	2 20 28.96	1.9215	10 2 9.4	11.881
7	0 50 45.30	1.9177	N. 0 4 51.8	13.239	7	2 22 24.28	1.9228	10 14 0.8	11.833
8	0 52 40.32	1.9164	0 18 5.9	13.230	8	2 24 19.70	1.9242	10 25 49.3	11.784
9	0 54 35.27	1.9152	0 31 19.4	13.219	9	2 26 15.20	1.9257	10 37 34.9	11.735
10	0 56 30.14	1.9140	0 44 32.2	13.207	10	2 28 10.79	1.9272	10 49 17.5	11.684
11	0 58 24.94	1.9129	0 57 44.2	13.193	11	2 30 6.47	1.9288	11 0 57.0	11.633
12	1 0 19.69	1.9119	1 10 55.3	13.179	12	2 32 2.25	1.9304	11 12 33.4	11.581
13	1 2 14.37	1.9108	1 24 5.6	13.165	13	2 33 58.12	1.9320	11 24 6.7	11.528
14	1 4 8.99	1.9099	1 37 15.1	13.151	14	2 35 54.09	1.9336	11 35 36.8	11.475
15	1 6 3.56	1.9090	1 50 23.7	13.135	15	2 37 50.16	1.9353	11 47 3.7	11.421
16	1 7 58.08	1.9083	2 3 31.3	13.118	16	2 39 46.33	1.9370	11 58 27.3	11.366
17	1 9 52.56	1.9076	2 16 37.9	13.101	17	2 41 42.60	1.9389	12 9 47.6	11.311
18	1 11 47.00	1.9069	2 29 43.4	13.082	18	2 43 38.99	1.9407	12 21 4.6	11.255
19	1 13 41.39	1.9063	2 42 47.8	13.063	19	2 45 35.48	1.9425	12 32 18.2	11.197
20	1 15 35.75	1.9058	2 55 51.0	13.042	20	2 47 32.08	1.9444	12 43 28.3	11.138
21	1 17 30.09	1.9053	3 8 52.9	13.021	21	2 49 28.80	1.9464	12 54 34.8	11.079
22	1 19 24.39	1.9048	3 21 53.5	12.999	22	2 51 25.64	1.9483	13 5 37.8	11.020
23	1 21 18.67	1.9044	3 34 52.8	12.977	23	2 53 22.59	1.9503	13 16 37.2	10.960
24	1 23 12.94	1.9042	N. 3 47 50.8	12.954	24	2 55 19.67	1.9523	N. 13 27 33.0	10.899

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 25.					**MONDAY 27.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 55 19.67	1.9523	N.13 27 33.0	10.899	0	4 31 48.10	2.0717	N.20 46 15.5	7.167
1	2 57 16.87	1.9543	13 38 25.1	10.837	1	4 33 52.48	2.0743	20 53 19.1	7.042
2	2 59 14.19	1.9564	13 49 13.5	10.775	2	4 35 57.02	2.0769	21 0 16.9	6.916
3	3 1 11.64	1.9585	13 59 58.1	10.712	3	4 38 1.71	2.0794	21 7 9.0	6.820
4	3 3 9.21	1.9606	14 10 38.9	10.647	4	4 40 6.54	2.0819	21 13 55.3	6.722
5	3 5 6.92	1.9629	14 21 15.8	10.582	5	4 42 11.54	2.0844	21 20 35.7	6.623
6	3 7 4.76	1.9652	14 31 48.7	10.516	6	4 44 16.68	2.0868	21 27 10.1	6.524
7	3 9 2.74	1.9674	14 42 17.7	10.450	7	4 46 21.96	2.0894	21 33 38.6	6.425
8	3 11 0.85	1.9696	14 52 42.7	10.383	8	4 48 27.40	2.0919	21 40 1.1	6.326
9	3 12 59.09	1.9718	15 3 3.7	10.316	9	4 50 32.98	2.0943	21 46 17.7	6.227
10	3 14 57.47	1.9742	15 13 20.6	10.247	10	4 52 38.72	2.0967	21 52 28.3	6.126
11	3 16 55.99	1.9765	15 23 33.3	10.177	11	4 54 44.58	2.0990	21 58 32.8	6.023
12	3 18 54.65	1.9788	15 33 41.8	10.107	12	4 56 50.59	2.1013	22 4 31.1	5.921
13	3 20 53.45	1.9812	15 43 46.1	10.036	13	4 58 56.74	2.1036	22 10 23.3	5.819
14	3 22 52.40	1.9837	15 53 46.1	9.964	14	5 1 3.02	2.1059	22 16 9.4	5.717
15	3 24 51.50	1.9861	16 3 41.8	9.892	15	5 3 9.45	2.1082	22 21 49.3	5.613
16	3 26 50.74	1.9886	16 13 33.2	9.820	16	5 5 16.01	2.1105	22 27 23.0	5.509
17	3 28 50.13	1.9910	16 23 20.2	9.746	17	5 7 22.71	2.1127	22 32 50.4	5.404
18.	3 30 49.66	1.9936	16 33 2.7	9.671	18	5 9 29.53	2.1148	22 38 11.5	5.298
19	3 32 49.36	1.9961	16 42 40.7	9.595	19	5 11 36.48	2.1170	22 43 26.2	5.193
20	3 34 49.19	1.9986	16 52 14.1	9.519	20	5 13 43.56	2.1191	22 48 34.6	5.088
21	3 36 49.19	2.0011	17 1 43.0	9.443	21	5 15 50.77	2.1212	22 53 36.7	4.982
22	3 38 49.32	2.0036	17 11 7.3	9.366	22	5 17 58.11	2.1233	22 58 32.4	4.874
23	3 40 49.61	2.0062	N.17 20 26.9	9.287	23	5 20 5.56	2.1253	N.23 3 21.6	4.767
	SUNDAY 26.					**TUESDAY 28.**			
0	3 42 50.07	2.0088	N.17 29 41.7	9.207	0	5 22 13.14	2.1272	N.23 8 4.4	4.659
1	3 44 50.67	2.0114	17 38 51.8	9.128	1	5 24 20.83	2.1292	23 12 40.7	4.551
2	3 46 51.43	2.0140	17 47 57.1	9.048	2	5 26 28.64	2.1311	23 17 10.5	4.443
3	3 48 52.34	2.0167	17 56 57.6	8.967	3	5 28 36.56	2.1330	23 21 33.8	4.334
4	3 50 53.43	2.0193	18 5 53.2	8.885	4	5 30 44.60	2.1348	23 25 50.6	4.225
5	3 52 54.66	2.0218	18 14 43.8	8.803	5	5 32 52.74	2.1365	23 30 0.8	4.114
6	3 54 56.04	2.0244	18 23 29.5	8.720	6	5 35 0.98	2.1382	23 24 4.3	4.003
7	3 56 57.59	2.0271	18 32 10.2	8.636	7	5 37 9.33	2.1400	23 38 1.2	3.893
8	3 58 59.29	2.0297	18 40 45.8	8.551	8	5 39 17.78	2.1417	23 41 51.5	3.783
9	4 1 1.15	2.0324	18 49 16.3	8.466	9	5 41 26.33	2.1434	23 45 35.2	3.672
10	4 3 3.18	2.0350	18 57 41.7	8.380	10	5 43 34.98	2.1449	23 49 12.2	3.560
11	4 5 5.35	2.0377	19 6 1.9	8.293	11	5 45 43.71	2.1463	23 52 42.4	3.447
12	4 7 7.69	2.0404	19 14 16.9	8.206	12	5 47 52.53	2.1478	23 56 5.8	3.334
13	4 9 10.19	2.0430	19 22 26.6	8.118	13	5 50 1.44	2.1493	23 59 22.5	3.222
14	4 11 12.85	2.0456	19 30 31.0	8.030	14	5 52 10.44	2.1507	24 2 32.5	3.110
15	4 13 15.66	2.0482	19 38 30.2	7.942	15	5 54 19.53	2.1521	24 5 35.7	2.997
16	4 15 18.63	2.0509	19 46 24.0	7.851	16	5 56 28.69	2.1533	24 8 32.1	2.883
17	4 17 21.77	2.0536	19 54 12.3	7.759	17	5 58 37.92	2.1545	24 11 21.7	2.770
18	4 19 25.06	2.0562	20 1 55.1	7.667	18	6 0 47.23	2.1557	24 14 4.5	2.656
19	4 21 28.51	2.0588	20 9 32.4	7.576	19	6 2 56.61	2.1569	24 16 40.4	2.541
20	4 23 32.12	2.0614	20 17 4.2	7.484	20	6 5 6.06	2.1580	24 19 9.4	2.427
21	4 25 35.88	2.0640	20 24 30.5	7.392	21	6 7 15.58	2.1590	24 21 31.6	2.312
22	4 27 39.80	2.0666	20 31 51.2	7.298	22	6 9 25.15	2.1600	24 23 46.9	2.197
23	4 29 43.88	2.0692	20 39 6.2	7.203	23	6 11 34.78	2.1610	24 25 55.3	2.082
24	4 31 48.10	2.0717	N.20 46 15.5	7.107	24	6 13 44.47	2.1619	N.24 27 56.7	1.966

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 29.					THURSDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	6 13 44.47	2.1619	N.24 27 56.7	1.966	0	7 5 45.35	2.1675	N.24 41 38.3	0.830
1	6 15 54.21	2.1628	24 29 51.2	1.851	1	7 7 55.39	2.1671	24 40 45.0	0.947
2	6 18 4.00	2.1636	24 31 38.8	1.736	2	7 10 5.40	2.1067	24 39 44.7	1.063
3	6 20 13.83	2.1643	24 33 19.5	1.620	3	7 12 15.39	2.1662	24 38 37.4	1.180
4	6 22 23.71	2.1650	24 34 53.2	1.503	4	7 14 25.34	2.1656	24 37 23.1	1.297
5	6 24 33.63	2.1656	24 36 19.9	1.387	5	7 16 35.25	2.1650	24 36 1.8	1.413
6	6 26 43.58	2.1661	24 37 39.7	1.272	6	7 18 45.13	2.1643	24 34 33.5	1.530
7	6 28 53.56	2.1667	24 38 52.5	1.155	7	7 20 54.96	2.1636	24 32 58.2	1.646
8	6 31 3.58	2.1672	24 39 58.3	1.038	8	7 23 4.74	2.1628	24 31 16.0	1.761
9	6 33 13.63	2.1676	24 40 57.1	0.922	9	7 25 14.49	2.1620	24 29 26.9	1.876
10	6 35 23.69	2.1679	24 41 48.9	0.805	10	7 27 24.18	2.1610	24 27 30.9	1.991
11	6 37 33.78	2.1683	24 42 33.7	0.689	11	7 29 33.81	2.1600	24 25 28.0	2.107
12	6 39 43.89	2.1686	24 43 11.6	0.573	12	7 31 43.39	2.1591	24 23 18.1	2.222
13	6 41 54.01	2.1688	24 43 42.5	0.456	13	7 33 52.91	2.1581	24 21 1.3	2.337
14	6 44 4.14	2.1689	24 44 6.3	0.338	14	7 36 2.37	2.1571	24 18 37.7	2.451
15	6 46 14.28	2.1690	24 44 23.0	0.220	15	7 38 11.76	2.1560	24 16 7.2	2.566
16	6 48 24.43	2.1691	24 44 32.7	+0.103	16	7 40 21.09	2.1549	24 13 20.8	2.680
17	6 50 34.57	2.1691	24 44 35.4	−0.013	17	7 42 30.35	2.1537	24 10 45.6	2.794
18	6 52 44.72	2.1691	24 44 31.1	0.130	18	7 44 39.54	2.1524	24 7 54.5	2.908
19	6 54 54.86	2.1689	24 44 19.8	0.247	19	7 46 48.64	2.1512	24 4 56.6	3.022
20	6 57 4.98	2.1687	24 44 1.5	0.363	20	7 48 57.68	2.1499	24 1 51.9	3.134
21	6 59 15.10	2.1685	24 43 36.2	0.480	21	7 51 6.63	2.1486	23 58 40.5	3.247
22	7 1 25.20	2.1683	24 43 3.9	0.597	22	7 53 15.51	2.1472	23 55 22.3	3.359
23	7 3 35.29	2.1679	24 42 24.6	0.713	23	7 55 24.29	2.1458	23 51 57.4	3.472
24	7 5 45.35	2.1675	N.24 41 38.3	0.830	24	7 57 32.99	2.1444	N.23 48 25.7	3.584

PHASES OF THE MOON.

	d	h	m
☾ Last Quarter, ...	5	0	55.1
● New Moon, ...	12	5	8.9
☽ First Quarter, ...	18	20	47.2
○ Full Moon, ...	26	13	53.3

	d	h
☾ Apogee, ...	1	15.8
☾ Perigee, ...	13	16.4
☾ Apogee, ...	29	6.4

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	α Pegasi	W.	92° 46′ 54″	3480	94° 7′ 40″	3485	95° 28′ 21″	3489	96° 48′ 57″	3494
	α Arietis	W.	49 33 17	3282	50 57 49	3276	52 22 28	3271	53 47 13	3265
	Aldebaran	W.	17 38 25	3185	19 4 52	3172	20 31 35	3160	21 58 32	3152
	Jupiter	E.	34 48 5	3102	33 19 58	3106	31 51 56	3110	30 23 59	3114
	Regulus	E.	63 19 4	3082	61 50 32	3085	60 22 4	3087	58 53 29	3091
	Venus	E.	94 5 23	3284	92 40 53	3288	91 16 28	3291	89 52 6	3294
	Sun	E.	133 55 11	3468	132 34 11	3470	131 13 13	3471	129 52 16	3472
2	α Arietis	W.	60 52 30	3241	62 17 51	3236	63 43 17	3232	65 8 48	3227
	Aldebaran	W.	29 15 22	3124	30 43 3	3119	32 10 49	3116	33 38 39	3112
	Regulus	E.	51 32 14	3098	50 4 2	3098	48 35 50	3099	47 7 39	3098
	Venus	E.	82 51 1	3304	81 26 54	3304	80 2 47	3305	78 38 41	3304
	Sun	E.	123 7 52	3475	121 47 0	3474	120 26 7	3473	119 5 13	3471
3	α Arietis	W.	72 17 53	3201	73 44 1	3195	75 10 16	3189	76 36 38	3183
	Aldebaran	W.	40 59 8	3090	42 27 30	3084	43 55 59	3078	45 24 35	3073
	Regulus	E.	39 46 33	3094	38 18 16	3092	36 49 57	3090	35 21 35	3088
	Venus	E.	71 37 57	3298	70 13 43	3295	68 49 26	3292	67 25 5	3288
	Sun	E.	112 20 5	3456	110 58 52	3453	109 37 35	3447	108 16 12	3442
4	α Arietis	W.	83 50 29	3147	85 17 42	3138	86 45 5	3130	88 12 38	3122
	Aldebaran	W.	52 49 32	3038	54 18 58	3030	55 48 34	3022	57 18 20	3012
	Regulus	E.	27 59 8	3078	26 30 31	3078	25 1 54	3078	23 33 17	3078
	Venus	E.	60 22 7	3264	58 57 13	3258	57 32 12	3251	56 7 3	3244
	Sun	E.	101 27 35	3408	100 5 28	3400	98 43 11	3391	97 20 44	3382
5	Aldebaran	W.	64 50 12	2962	66 21 13	2950	67 52 29	2937	69 24 1	2925
	Pollux	W.	20 51 46	3031	22 21 20	3011	23 51 19	2991	25 21 43	2972
	Jupiter	W.	13 3 28	3061	14 32 25	3031	16 1 59	3005	17 32 6	2981
	Venus	E.	48 59 5	3203	47 32 59	3194	46 6 43	3184	44 40 15	3174
	Sun	E.	90 25 39	3328	89 2 0	3315	87 38 6	3302	86 13 57	3290
6	Aldebaran	W.	77 5 41	2859	78 38 53	2843	80 12 25	2828	81 46 16	2814
	Pollux	W.	32 59 31	2883	34 32 12	2866	36 5 15	2848	37 38 40	2831
	Jupiter	W.	25 9 10	2887	26 41 45	2869	28 14 43	2852	29 48 3	2835
	Venus	E.	37 24 53	3123	35 57 11	3113	34 29 17	3101	33 1 9	3091
	Sun	E.	79 9 16	3218	77 43 28	3202	76 17 21	3185	74 50 54	3169
7	Aldebaran	W.	89 40 36	2733	91 16 32	2716	92 52 51	2698	94 29 33	2681
	Pollux	W.	45 31 24	2743	47 7 7	2725	48 43 14	2707	50 19 45	2689
	Jupiter	W.	37 40 27	2747	39 16 5	2729	40 52 7	2710	42 28 34	2691
	Venus	E.	25 37 42	3052	24 8 34	3049	22 39 22	3048	21 10 9	3051
	Sun	E.	67 33 39	3082	66 5 8	3064	64 36 14	3046	63 6 58	3027
8	Pollux	W.	58 28 30	2596	60 7 31	2577	61 46 58	2558	63 26 51	2540
	Jupiter	W.	50 36 59	2599	52 15 56	2580	53 55 18	2561	55 35 7	2542
	Regulus	W.	22 40 18	2657	24 17 55	2630	25 56 9	2604	27 34 58	2580
	Sun	E.	55 34 45	2931	54 3 5	2912	52 31 1	2893	50 58 33	2873
9	Pollux	W.	71 52 44	2446	73 35 13	2428	75 18 8	2410	77 1 29	2391
	Jupiter	W.	64 0 43	2448	65 43 9	2429	67 26 2	2412	69 9 20	2394
	Regulus	W.	35 57 13	2467	37 39 12	2447	39 21 40	2427	41 4 36	2408
	Sun	E.	43 9 53	2776	41 34 54	2757	39 59 30	2739	38 23 42	2720
10	Pollux	W.	85 44 35	2306	87 30 26	2289	89 16 42	2273	91 3 21	2258

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L of Diff.	XXI^{h}.	P. L. of Diff.
1	α Pegasi	W.	98° 9′ 28″	3499	99° 29′ 53″	3504	100° 50′ 13″	3509	102° 10′ 27″	3515
	α Arietis	W.	55 12 5	3260	56 37 3	3256	58 2 6	3251	59 27 15	3246
	Aldebaran	W.	23 25 39	3144	24 52 55	3138	26 20 18	3133	27 47 47	3129
	Jupiter	E.	28 56 6	3118	27 28 18	3121	26 0 34	3126	24 32 56	3129
	Regulus	E.	57 25 18	3092	55 56 59	3094	54 28 42	3096	53 0 27	3097
	Venus	E.	88 27 47	3297	87 3 32	3300	85 39 20	3301	84 15 10	3302
	Sun	E.	128 31 21	3474	127 10 28	3475	125 49 36	3475	124 28 44	3475
2	α Arietis	W.	66 34 25	3222	68 0 8	3218	69 25 56	3212	70 51 51	3206
	Aldebaran	W.	35 6 34	3108	36 34 34	3103	38 2 40	3099	39 30 52	3094
	Regulus	E.	45 39 27	3098	44 11 15	3097	42 43 2	3096	41 14 48	3096
	Venus	E.	77 14 34	3304	75 50 27	3303	74 26 19	3301	73 2 9	3300
	Sun	E.	117 44 17	3470	116 23 19	3467	115 2 18	3463	113 41 13	3461
3	α Arietis	W.	78 3 8	3176	79 29 46	3169	80 56 32	3163	82 23 26	3155
	Aldebaran	W.	46 53 18	3066	48 22 9	3060	49 51 8	3053	51 20 15	3045
	Regulus	E.	33 53 11	3086	32 24 44	3084	30 56 15	3082	29 27 43	3079
	Venus	E.	66 0 40	3284	64 36 10	3280	63 11 35	3275	61 46 54	3270
	Sun	E.	106 54 43	3436	105 33 7	3430	104 11 24	3423	102 49 34	3415
4	α Arietis	W.	89 40 21	3113	91 8 15	3104	92 36 20	3095	94 4 36	3084
	Aldebaran	W.	58 48 18	3002	60 18 28	2993	61 48 50	2983	63 19 24	2972
	Regulus	E.	22 4 41	3081	20 36 8	3087	19 7 42	3893	17 39 24	3103
	Venus	E.	54 41 46	3236	53 16 20	3229	51 50 45	3220	50 25 0	3212
	Sun	E.	95 58 7	3372	94 35 18	3361	93 12 17	3351	91 49 4	3340
5	Aldebaran	W.	70 55 48	2912	72 27 51	2900	74 0 10	2886	75 32 47	2873
	Pollux	W.	26 52 31	2954	28 23 42	2935	29 55 16	2918	31 27 12	2900
	Jupiter	W.	19 2 42	2962	20 33 43	2942	22 5 9	2924	23 36 58	2905
	Venus	E.	43 13 35	3164	41 46 40	3154	40 19 39	3144	38 52 23	3133
	Sun	E.	84 49 34	3276	83 24 55	3262	81 59 59	3247	80 34 46	3233
6	Aldebaran	W.	83 20 26	2798	84 54 57	2782	86 29 49	2766	88 5 2	2750
	Pollux	W.	39 12 27	2815	40 46 36	2797	42 21 8	2779	43 56 4	2760
	Jupiter	W.	31 21 46	2818	32 55 51	2799	34 30 20	2782	36 5 12	2764
	Venus	E.	31 32 49	3082	30 4 18	3073	28 35 35	3065	27 6 43	3058
	Sun	E.	73 24 8	3153	71 57 3	3135	70 29 36	3118	69 1 48	3101
7	Aldebaran	W.	96 6 38	2664	97 44 6	2646	99 21 58	2629	101 0 14	2610
	Pollux	W.	51 56 40	2670	53 34 0	2652	55 11 45	2633	56 49 55	2615
	Jupiter	W.	44 5 26	2673	45 42 42	2655	47 20 22	2636	48 58 28	2618
	Venus	E.	19 40 59	3059	18 11 59	3073	16 43 17	3098	15 15 5	3139
	Sun	E.	61 37 19	3009	60 7 17	2989	58 36 51	2969	57 6 0	2950
8	Pollux	W.	65 7 9	2521	66 47 53	2502	68 29 4	2483	70 10 41	2465
	Jupiter	W.	57 15 22	2523	58 56 3	2504	60 37 10	2486	62 18 43	2467
	Regulus	W.	29 14 21	2556	30 54 17	2533	32 34 45	2510	34 15 44	2489
	Sun	E.	49 25 39	2853	47 52 20	2834	46 18 36	2815	44 44 27	2795
9	Pollux	W.	78 45 16	2374	80 29 28	2356	82 14 6	2339	83 59 8	2322
	Jupiter	W.	70 53 4	2375	72 37 14	2358	74 21 49	2340	76 6 50	2324
	Regulus	W.	42 48 0	2388	44 31 52	2368	46 16 12	2350	48 0 59	2333
	Sun	E.	36 47 29	2702	35 10 52	2684	33 33 51	2668	31 56 28	2652
10	Pollux	W.	92 50 23	2242	94 37 48	2228	96 25 34	2214	98 13 41	2200

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	Jupiter	W.	77° 52′ 15″	2307	79° 38′ 5″	2290	81° 24′ 19″	2274	83° 10′ 56″	2258
	Regulus	W.	49 46 11	2315	51 31 49	2297	53 17 53	2281	55 4 21	2264
	Sun	E.	30 18 44	2636	28 40 38	2621	27 2 11	2606	25 23 24	2592
14	Sun	W.	24 51 7	2373	26 35 21	2373	28 19 34	2374	30 3 46	2377
	Fomalhaut	E.	76 40 32	2231	74 52 51	2239	73 5 2	2246	71 18 2	2254
	α Pegasi	E.	94 41 12	2461	92 59 4	2462	91 16 58	2466	89 34 57	2470
15	Sun	W.	38 43 24	2403	40 26 55	2410	42 10 15	2418	43 53 24	2426
	Fomalhaut	E.	62 25 11	2316	60 39 35	2332	58 54 22	2350	57 9 35	2370
	α Pegasi	E.	81 7 4	2514	79 26 10	2527	77 45 35	2541	76 5 19	2556
16	Sun	W.	52 25 47	2479	54 7 30	2490	55 48 57	2502	57 30 7	2515
	Fomalhaut	E.	48 33 28	2494	46 52 6	2525	45 11 28	2559	43 31 37	2597
	α Pegasi	E.	67 50 11	2660	66 12 38	2686	64 35 39	2713	62 59 16	2742
	α Arietis	E.	109 49 9	2302	108 3 13	2311	106 17 29	2320	104 31 58	2329
17	Sun	W.	65 51 28	2582	67 30 48	2596	69 9 49	2610	70 48 30	2625
	Saturn	W.	23 46 57	2302	25 32 54	2313	27 18 34	2326	29 3 56	2338
	Mars	W.	23 2 20	2497	24 43 38	2511	26 24 36	2525	28 5 15	2539
	α Pegasi	E.	55 7 56	2923	53 36 6	2968	52 5 13	3016	50 35 20	3068
	α Arietis	E.	95 48 9	2385	94 4 13	2398	92 20 36	2412	90 37 18	2425
18	Sun	W.	78 56 58	2698	80 33 40	2713	82 10 3	2728	83 46 6	2743
	Saturn	W.	37 46 8	2404	39 29 37	2418	41 12 46	2432	42 55 35	2445
	Mars	W.	36 23 29	2612	38 2 8	2627	39 40 26	2642	41 18 24	2656
	α Pegasi	E.	43 23 26	3401	42 1 11	3488	40 40 33	3583	39 21 40	3688
	α Arietis	E.	82 5 43	2497	80 24 25	2512	78 43 29	2527	77 2 54	2543
19	Sun	W.	91 41 25	2817	93 15 31	2831	94 49 18	2845	96 22 47	2860
	Saturn	W.	51 24 53	2514	53 5 47	2527	54 46 22	2540	56 26 39	2553
	Mars	W.	49 23 21	2729	50 59 22	2744	52 35 4	2758	54 10 27	2772
	α Aquilæ	W.	43 43 39	4419	44 48 43	4317	45 55 20	4227	47 3 21	4145
	α Arietis	E.	68 45 33	2626	67 7 13	2643	65 29 16	2660	63 51 43	2678
	Aldebaran	E.	99 0 32	2489	97 19 4	2504	95 37 56	2517	93 57 6	2530
20	Sun	W.	104 5 40	2929	105 37 22	2942	107 8 47	2956	108 39 55	2969
	Saturn	W.	64 43 33	2618	66 22 4	2630	68 0 18	2643	69 38 15	2655
	Mars	W.	62 2 53	2839	63 36 30	2853	65 9 49	2866	66 42 51	2879
	α Aquilæ	W.	53 0 19	3857	54 14 22	3817	55 29 7	3782	56 44 28	3749
	α Arietis	E.	55 50 1	2772	54 14 57	2792	52 40 19	2814	51 6 9	2836
	Aldebaran	E.	85 37 27	2593	83 58 23	2607	82 19 37	2619	80 41 8	2631
21	Sun	W.	116 11 38	3030	117 41 13	3043	119 10 33	3055	120 39 38	3066
	Saturn	W.	77 44 1	2713	79 20 24	2723	80 56 33	2734	82 32 28	2745
	Mars	W.	74 24 4	2939	75 55 33	2952	77 26 46	2964	78 57 44	2974
	α Aquilæ	W.	63 8 29	3638	64 26 22	3623	65 44 32	3610	67 2 56	3598
	α Arietis	E.	43 22 47	2961	41 51 45	2990	40 21 20	3021	38 51 33	3056
	Aldebaran	E.	72 32 42	2689	70 55 48	2700	69 19 8	2711	67 42 43	2722
22	Sun	W.	128 1 39	3120	129 29 24	3131	130 56 56	3141	132 24 16	3151
	Saturn	W.	90 28 33	2795	92 3 7	2805	93 37 28	2815	95 11 38	2824
	Mars	W.	86 29 14	3027	87 58 53	3038	89 28 19	3048	90 57 32	3057
	α Aquilæ	W.	73 37 20	3566	74 56 31	3565	76 15 44	3563	77 34 59	3562
	Fomalhaut	W.	38 21 59	3231	39 47 32	3209	41 13 30	3192	42 39 49	3177

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	Jupiter	W.	84° 57′ 57″	2243	86° 45′ 20″	2228	88° 33′ 6″	2214	90° 21′ 13″	2200
	Regulus	W.	56 51 13	2248	58 38 29	2233	60 26 7	2218	62 14 7	2204
	Sun	E.	23 44 18	2580	22 4 55	2570	20 25 19	2561	18 45 31	2556
14	Sun	W.	31 47 54	2380	33 31 57	2384	35 15 54	2390	36 59 43	2396
	Fomalhaut	E.	69 30 55	2264	67 44 3	2275	65 57 27	2287	64 11 9	2301
	α Pegasi	E.	87 53 2	2476	86 11 15	2483	84 29 38	2492	82 48 14	2502
15	Sun	W.	45 36 21	2436	47 19 4	2446	49 1 33	2456	50 43 48	2467
	Fomalhaut	E.	55 25 17	2391	53 41 29	2412	51 58 12	2438	50 15 31	2465
	α Pegasi	E.	74 25 26	2575	72 45 57	2593	71 6 53	2614	69 28 17	2636
16	Sun	W.	59 11 0	2528	60 51 34	2541	62 31 50	2554	64 11 48	2567
	Fomalhaut	E.	41 52 38	2639	40 14 36	2685	38 37 36	2736	37 1 44	2792
	α Pegasi	E.	61 23 32	2773	59 48 29	2807	58 14 10	2843	56 40 38	2882
	α Arietis	E.	102 46 41	2339	101 1 39	2350	99 16 52	2362	97 32 22	2373
17	Sun	W.	72 26 51	2640	74 4 52	2654	75 42 34	2669	77 19 56	2684
	Saturn	W.	30 49 0	2350	32 33 46	2364	34 18 13	2378	36 2 20	2391
	Mars	W.	29 45 34	2553	31 25 33	2568	33 5 12	2583	34 44 30	2597
	α Pegasi	E.	49 6 31	3124	47 38 50	3184	46 12 22	3250	44 47 12	3322
	α Arietis	E.	88 54 19	2439	87 11 40	2453	85 29 21	2467	83 47 22	2482
18	Sun	W.	85 21 49	2758	86 57 12	2772	88 32 16	2788	90 7 0	2802
	Saturn	W.	44 38 5	2459	46 20 16	2472	48 2 8	2487	49 43 40	2500
	Mars	W.	42 56 3	2671	44 33 22	2686	46 10 21	2700	47 47 1	2715
	α Pegasi	E.	38 4 40	3806	36 49 44	3937	35 37 2	4083	34 26 44	4249
	α Arietis	E.	75 22 41	2559	73 42 50	2576	72 3 22	2592	70 24 16	2609
19	Sun	W.	97 55 57	2874	99 28 49	2888	101 1 23	2901	102 33 40	2915
	Saturn	W.	58 6 38	2567	59 46 18	2580	61 25 40	2593	63 4 45	2605
	Mars	W.	55 45 33	2785	57 20 19	2799	58 54 48	2813	60 28 59	2826
	α Aquilæ	W.	48 12 39	4075	49 23 5	4010	50 34 35	3953	51 47 1	3902
	α Arietis	E.	62 14 33	2695	60 37 47	2714	59 1 26	2734	57 25 31	2753
	Aldebaran	E.	92 16 34	2543	90 36 21	2556	88 56 26	2569	87 16 48	2581
20	Sun	W.	110 10 47	2981	111 41 23	2994	113 11 43	3006	114 41 48	3018
	Saturn	W.	71 15 56	2666	72 53 21	2678	74 30 30	2690	76 7 23	2701
	Mars	W.	68 15 37	2891	69 48 7	2904	71 20 21	2916	72 52 20	2927
	α Aquilæ	W.	58 0 23	3721	59 16 48	3696	60 33 39	3674	61 50 54	3655
	α Arietis	E.	49 32 28	2859	47 59 16	2882	46 26 34	2907	44 54 24	2933
	Aldebaran	E.	79 2 55	2643	77 24 58	2655	75 47 17	2666	74 9 52	2678
21	Sun	W.	122 8 29	3077	123 37 7	3088	125 5 31	3100	126 33 41	3110
	Saturn	W.	84 8 8	2756	85 43 34	2766	87 18 47	2776	88 53 46	2785
	Mars	W.	80 28 29	2985	81 59 0	2996	83 29 18	3006	84 59 23	3018
	α Aquilæ	W.	68 21 32	3589	69 40 18	3582	70 59 12	3576	72 18 13	3570
	α Arietis	E.	37 22 29	3092	35 54 10	3133	34 26 40	3177	33 0 3	3225
	Aldebaran	E.	66 6 33	2733	64 30 37	2744	62 54 55	2754	61 19 27	2764
22	Sun	W.	133 51 24	3161	135 18 20	3171	136 45 4	3180	138 11 37	3188
	Saturn	W.	96 45 35	2833	98 19 20	2842	99 52 54	2850	101 26 17	2859
	Mars	W.	92 26 34	3067	93 55 24	3076	95 24 3	3085	96 52 31	3095
	α Aquilæ	W.	78 54 15	3563	80 13 30	3565	81 32 43	3566	82 51 54	3570
	Fomalhaut	W.	44 6 26	3164	45 33 18	3153	47 0 23	3144	48 27 39	3137

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
22	Aldebaran	E.	59° 44′ 12″	2774	58° 9′ 10″	2785	56° 34′ 22″	2794	54° 59′ 46″	2804
	Jupiter	E.	111 48 56	2759	110 13 34	2768	108 38 24	2777	107 3 26	2785
23	Mars	W.	98 20 47	3103	99 48 53	3112	101 16 48	3121	102 44 32	3129
	Fomalhaut	W.	49 55 4	3131	51 22 36	3126	52 50 14	3123	54 17 56	3119
	α Pegasi	W.	37 15 14	4179	38 24 0	4098	39 34 4	4023	40 45 21	3956
	Aldebaran	E.	47 9 57	2852	45 36 36	2861	44 3 27	2870	42 30 30	2880
	Pollux	E.	91 19 35	2841	89 46 0	2848	88 12 35	2856	86 39 20	2864
	Jupiter	E.	99 11 24	2828	97 37 32	2835	96 3 50	2844	94 30 19	2851
24	Fomalhaut	W.	61 37 1	3116	63 4 51	3117	64 32 40	3118	66 0 28	3119
	α Pegasi	W.	46 55 51	3727	48 12 9	3694	49 29 2	3665	50 46 26	3638
	Aldebaran	E.	34 48 46	2927	33 17 2	2938	31 45 31	2948	30 14 13	2959
	Pollux	E.	78 55 33	2901	77 23 16	2909	75 51 8	2916	74 19 9	2923
	Jupiter	E.	86 45 2	2887	85 12 27	2894	83 40 0	2901	82 7 42	2907
	Regulus	E.	114 55 4	2905	113 22 51	2912	111 50 47	2918	110 18 51	2925
25	Fomalhaut	W.	73 18 50	3133	74 46 20	3136	76 13 46	3139	77 41 8	3143
	α Pegasi	W.	57 19 34	3545	58 39 8	3532	59 58 57	3520	61 18 59	3509
	Pollux	E.	66 41 22	2955	65 10 13	2962	63 39 13	2968	62 8 20	2974
	Jupiter	E.	74 28 13	2939	72 56 43	2945	71 25 21	2950	69 54 6	2956
	Regulus	E.	102 41 13	2955	101 10 4	2962	99 39 3	2967	98 8 9	2973
26	Fomalhaut	W.	84 56 48	3163	86 23 41	3168	87 50 28	3173	89 17 10	3178
	α Pegasi	W.	68 1 36	3474	69 22 29	3470	70 43 27	3465	72 4 30	3463
	α Arietis	W.	24 41 37	3786	25 56 54	3709	27 13 32	3644	28 31 19	3589
	Pollux	E.	54 35 51	3004	53 5 43	3009	51 35 42	3015	50 5 48	3022
	Jupiter	E.	62 19 36	2983	60 49 2	2989	59 18 35	2993	57 48 14	2998
	Regulus	E.	90 35 25	3000	89 5 12	3005	87 35 5	3010	86 5 5	3015
27	Fomalhaut	W.	96 29 13	3203	97 55 19	3208	99 21 19	3214	100 47 12	3220
	α Pegasi	W.	78 50 18	3457	80 11 30	3456	81 32 43	3458	82 53 54	3459
	α Arietis	W.	35 12 36	3414	36 34 37	3392	37 57 3	3372	39 19 52	3354
	Pollux	E.	42 38 7	3049	41 8 55	3055	39 39 50	3060	38 10 52	3067
	Jupiter	E.	50 18 1	3022	48 48 16	3026	47 18 36	3031	45 49 2	3035
	Regulus	E.	78 36 34	3039	77 7 9	3043	75 37 49	3047	74 8 34	3051
28	α Pegasi	W.	89 39 23	3471	91 0 20	3474	92 21 13	3477	93 42 3	3481
	α Arietis	W.	46 18 8	3296	47 42 24	3287	49 6 51	3280	50 31 26	3274
	Pollux	E.	30 47 53	3097	29 19 40	3104	27 51 35	3112	26 23 40	3121
	Jupiter	E.	38 22 27	3056	36 53 23	3059	35 24 23	3063	33 55 28	3067
	Regulus	E.	66 43 31	3069	65 14 44	3073	63 46 1	3076	62 17 22	3078
	Venus	E.	117 59 42	3420	116 37 48	3424	115 15 59	3427	113 54 13	3431
29	α Arietis	W.	57 36 4	3247	59 1 17	3244	60 26 34	3240	61 51 56	3236
	Aldebaran	W.	25 55 43	3130	27 23 16	3127	28 50 53	3124	30 18 34	3119
	Regulus	E.	54 54 56	3091	53 26 36	3093	51 58 18	3096	50 30 3	3097
	Venus	E.	107 6 11	3442	105 44 42	3444	104 23 15	3445	103 1 49	3446
	Spica	E.	108 56 31	3104	107 28 26	3105	106 0 22	3105	104 32 19	3106
30	α Arietis	W.	68 59 48	3219	70 25 35	3217	71 51 24	3212	73 17 19	3209
	Aldebaran	W.	37 37 58	3105	39 6 1	3103	40 34 7	3101	42 2 16	3098
	Regulus	E.	43 9 14	3103	41 41 8	3104	40 13 3	3105	38 45 0	3106
	Venus	E.	96 14 56	3448	94 53 34	3447	93 32 11	3446	92 10 47	3446
	Spica	E.	97 12 7	3105	95 44 3	3104	94 15 58	3103	92 47 52	3101

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
22	Aldebaran	E.	53° 25′ 23″	2814	51° 51′ 13″	2823	50° 17′ 15″	2833	48° 43′ 30″	2842
	Jupiter	E.	105 28 39	2795	103 54 4	2803	102 19 40	2811	100 45 27	2819
23	Mars	W.	104 12 6	3137	105 39 31	3145	107 6 46	3153	108 33 52	3161
	Fomalhaut	W.	55 45 42	3118	57 13 30	3116	58 41 20	3116	60 9 10	3115
	α Pegasi	W.	41 57 42	3901	43 11 1	3850	44 25 12	3804	45 40 10	3763
	Aldebaran	E.	40 57 45	2889	39 25 12	2898	37 52 51	2908	36 20 42	2918
	Pollux	E.	85 6 15	2872	83 33 20	2880	82 0 35	2887	80 27 59	2894
	Jupiter	E.	92 56 57	2858	91 23 44	2866	89 50 41	2873	88 17 47	2880
24	Fomalhaut	W.	67 28 14	3121	68 55 58	3124	70 23 39	3127	71 51 16	3129
	α Pegasi	W.	52 4 19	3616	53 22 36	3595	54 41 16	3576	56 0 16	3560
	Aldebaran	E.	28 43 9	2971	27 12 20	2983	25 41 46	2997	24 11 29	3011
	Pollux	E.	72 47 19	2929	71 15 37	2936	69 44 4	2942	68 12 39	2949
	Jupiter	E.	80 35 32	2913	79 3 30	2920	77 31 37	2926	75 59 51	2932
	Regulus	E.	108 47 4	2931	107 15 25	2937	105 43 53	2943	104 12 29	2950
25	Fomalhaut	W.	79 8 25	3147	80 35 38	3151	82 2 46	3155	83 29 49	3158
	α Pegasi	W.	62 39 13	3501	63 59 36	3493	65 20 8	3485	66 40 49	3480
	Pollux	E.	60 37 35	2981	59 6 58	2986	57 36 28	2993	56 6 6	2998
	Jupiter	E.	68 22 58	2962	66 51 57	2967	65 21 3	2973	63 50 16	2978
	Regulus	E.	96 37 23	2979	95 6 44	2984	93 36 11	2989	92 5 45	2994
26	Fomalhaut	W.	90 43 46	3182	92 10 17	3187	93 36 42	3192	95 3 1	3198
	α Pegasi	W.	73 25 36	3460	74 46 45	3459	76 7 55	3458	77 29 6	3457
	α Arietis	W.	29 50 5	3542	31 9 43	3503	32 30 4	3469	33 51 3	3438
	Pollux	E.	48 36 2	3027	47 6 23	3032	45 36 51	3039	44 7 26	3043
	Jupiter	E.	56 17 59	3004	54 47 51	3009	53 17 49	3013	51 47 52	3018
	Regulus	E.	84 35 11	3020	83 5 23	3025	81 35 41	3030	80 6 5	3034
27	Fomalhaut	W.	102 12 58	3225	103 38 37	3231	105 4 9	3236	106 29 35	3242
	α Pegasi	W.	84 15 4	3461	85 36 12	3463	86 57 18	3464	88 18 22	3467
	α Arietis	W.	40 43 1	3339	42 6 27	3326	43 30 8	3315	44 54 2	3305
	Pollux	E.	36 42 2	3073	35 13 19	3078	33 44 43	3084	32 16 14	3091
	Jupiter	E.	44 19 33	3039	42 50 9	3043	41 20 50	3047	39 51 36	3052
	Regulus	E.	72 39 24	3055	71 10 19	3058	69 41 18	3062	68 12 22	3066
28	α Pegasi	W.	95 2 48	3485	96 23 29	3490	97 44 4	3496	99 4 33	3501
	α Arietis	W.	51 56 8	3267	53 20 58	3262	54 45 54	3257	56 10 56	3252
	Pollux	E.	24 55 56	3130	23 28 23	3141	22 1 3	3152	20 33 56	3165
	Jupiter	E.	32 26 38	3071	30 57 53	3074	29 29 12	3078	28 0 36	3082
	Regulus	E.	60 48 46	3082	59 20 14	3084	57 51 45	3087	56 23 19	3089
	Venus	E.	112 32 32	3433	111 10 53	3435	109 49 16	3438	108 27 42	3440
29	α Arietis	W.	63 17 23	3232	64 42 53	3230	66 8 27	3225	67 34 6	3223
	Aldebaran	W.	31 46 20	3116	33 14 10	3114	34 42 3	3111	36 9 59	3109
	Regulus	E.	49 1 50	3099	47 33 39	3100	46 5 29	3101	44 37 21	3102
	Venus	E.	101 40 25	3447	100 19 2	3448	98 57 40	3448	97 36 18	3448
	Spica	E.	103 4 17	3106	101 36 15	3106	100 8 13	3105	98 40 10	3105
30	α Arietis	W.	74 43 18	3205	76 9 21	3202	77 35 28	3198	79 1 40	3193
	Aldebaran	W.	43 30 28	3095	44 58 44	3091	46 27 4	3087	47 55 29	3084
	Regulus	E.	37 16 58	3107	35 48 57	3107	34 20 56	3108	32 52 56	3109
	Venus	E.	90 49 22	3445	89 27 56	3442	88 6 27	3439	86 44 55	3438
	Spica	E.	91 19 44	3100	89 51 34	3097	88 23 21	3096	86 55 6	3092

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.			Diff. for 1 hour.	Apparent Declination.			Diff. for 1 hour.	Semi-diameter.		Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from* / *added to* Apparent Time.		Diff. for 1 hour.
		h	m	s	s	°	′	″	″	′	″	s	m	s	s
Frid.	1	16	28	41.96	10.793	S.21	47	51.0	−23.48	16	15.99	70.27	10	52.66	0.934
Sat.	2	16	33	1.34	10.820	21	57	2.2	22.43	16	16.13	70.35	10	29.90	0.961
Sun.	3	16	37	21.37	10.847	22	5	48.1	21.37	16	16.27	70.44	10	6.50	0.987
Mon.	4	16	41	42.02	10.873	22	14	8.6	20.31	16	16.40	70.51	9	42.47	1.014
Tues.	5	16	46	3.26	10.898	22	22	3.3	19.23	16	16.53	70.58	9	17.85	1.039
Wed.	6	16	50	25.08	10.922	22	29	31.9	18.14	16	16.66	70.65	8	52.66	1.062
Thur.	7	16	54	47.46	10.944	22	36	34.2	17.03	16	16.78	70.72	8	26.91	1.085
Frid.	8	16	59	10.37	10.965	22	43	10.0	15.91	16	16.90	70.78	8	0.64	1.106
Sat.	9	17	3	33.76	10.984	22	49	18.9	14.79	16	17.02	70.84	7	33.88	1.125
Sun.	10	17	7	57.60	11.002	22	55	0.8	13.67	16	17.13	70.90	7	6.68	1.143
Mon.	11	17	12	21.86	11.020	23	0	15.5	12.54	16	17.24	70.95	6	39.05	1.160
Tues.	12	17	16	46.51	11.035	23	5	2.6	11.39	16	17.34	71.00	6	11.03	1.176
Wed.	13	17	21	11.52	11.049	23	9	22.3	10.24	16	17.44	71.05	5	42.65	1.190
Thur.	14	17	25	36.85	11.063	23	13	14.4	9.09	16	17.53	71.09	5	13.94	1.202
Frid.	15	17	30	2.47	11.074	23	16	38.7	7.92	16	17.62	71.13	4	44.96	1.213
Sat.	16	17	34	28.32	11.083	23	19	35.1	6.75	16	17.71	71.16	4	15.76	1.223
Sun.	17	17	38	54.37	11.090	23	22	3.4	5.58	16	17.80	71.20	3	46.35	1.230
Mon.	18	17	43	20.60	11.096	23	24	3.4	4.41	16	17.89	71.22	3	16.76	1.236
Tues.	19	17	47	46.98	11.101	23	25	35.2	3.24	16	17.96	71.24	2	47.03	1.241
Wed.	20	17	52	13.46	11.104	23	26	38.8	2.06	16	18.03	71.25	2	17.19	1.244
Thur.	21	17	56	40.01	11.106	23	27	14.2	− 0.88	16	18.10	71.26	1	47.26	1.246
Frid.	22	18	1	6.59	11.107	23	27	21.2	+ 0.30	16	18.16	71.26	1	17.32	1.247
Sat.	23	18	5	33.17	11.106	23	26	59.9	1.48	16	18.21	71.26	0	47.38	1.246
Sun.	24	18	9	59.72	11.104	23	26	10.3	2.66	16	18.26	71.25	0	17.47	1.244
Mon.	25	18	14	26.22	11.101	23	24	52.5	3.84	16	18.30	71.24	0	12.38	1.241
Tues.	26	18	18	52.62	11.097	23	23	6.4	5.01	16	18.34	71.23	0	42.14	1.237
Wed.	27	18	23	18.91	11.093	23	20	52.0	6.18	16	18.37	71.21	1	11.80	1.233
Thur.	28	18	27	45.05	11.087	23	18	9.5	7.35	16	18.39	71.19	1	41.30	1.227
Frid.	29	18	32	11.01	11.079	23	14	58.9	8.52	16	18.41	71.17	2	10.62	1.219
Sat.	30	18	36	36.76	11.069	23	11	20.4	9.69	16	18.42	71.14	2	39.73	1.209
Sun.	31	18	41	2.27	11.059	23	7	14.0	10.86	16	18.42	71.11	3	8.60	1.199
Mon.	32	18	45	27.53	11.047	S.23	2	39.9	+12.01	16	18.42	71.07	3	37.21	1.187

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be added to* / *subtracted from* *Mean Time.*	Diff. for 1 hour.	Sidereal Time, or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Frid.	1	16 28 43.90	10.790	S.21 47 55.2	−23.47	10 52.49	0.934	16 39 36.39
Sat.	2	16 33 3.22	10.817	21 57 6.1	22.42	10 29.73	0.961	16 43 32.95
Sun.	3	16 37 23.18	10.843	22 5 51.6	21.36	10 6.33	0.987	16 47 29.51
Mon.	4	16 41 43.76	10.870	22 14 11.8	20.30	9 42.31	1.014	16 51 26.07
Tues.	5	16 46 4.93	10.895	22 22 6.2	19.22	9 17.69	1.039	16 55 22.62
Wed.	6	16 50 26.68	10.918	22 29 34.5	18.13	8 52.50	1.062	16 59 19.18
Thur.	7	16 54 48.98	10.941	22 36 36.5	17.02	8 26.76	1.085	17 3 15.74
Frid.	8	16 59 11.81	10.962	22 43 12.0	15.90	8 0.49	1.106	17 7 12.30
Sat.	9	17 3 35.12	10.981	22 49 20.7	14.78	7 33.74	1.125	17 11 8.86
Sun.	10	17 7 58.87	10.999	22 55 2.4	13.66	7 6.54	1.143	17 15 5.41
Mon.	11	17 12 23.05	11.017	23 0 16.8	12.53	6 38.92	1.160	17 19 1.97
Tues.	12	17 16 47.62	11.032	23 5 3.7	11.38	6 10.91	1.176	17 22 58.53
Wed.	13	17 21 12.55	11.046	23 9 23.2	10.23	5 42.54	1.190	17 26 55.09
Thur.	14	17 25 37.80	11.059	23 13 15.1	9.08	5 13.84	1.202	17 30 51.64
Frid.	15	17 30 3.33	11.069	23 16 39.3	7.92	4 44.87	1.213	17 34 48.20
Sat.	16	17 34 29.09	11.079	23 19 35.5	6.75	4 15.67	1.223	17 38 44.76
Sun.	17	17 38 55.05	11.086	23 22 3.6	5.58	3 46.27	1.230	17 42 41.32
Mon.	18	17 43 21.19	11.092	23 24 3.6	4.41	3 16.69	1.236	17 46 37.88
Tues.	19	17 47 47.47	11.097	23 25 35.4	3.24	2 46.97	1.241	17 50 34.44
Wed.	20	17 52 13.86	11.100	23 26 38.9	2.06	2 17.14	1.244	17 54 31.00
Thur.	21	17 56 40.32	11.102	23 27 14.2	− 0.88	1 47.24	1.246	17 58 27.56
Frid.	22	18 1 6.81	11.103	23 27 21.2	+ 0.30	1 17.30	1.247	18 2 24.11
Sat.	23	18 5 33.30	11.102	23 26 59.9	1.48	0 47.37	1.246	18 6 20.67
Sun.	24	18 9 59.76	11.100	23 26 10.4	2.66	0 17.47	1.244	18 10 17.23
Mon.	25	18 14 26.16	11.097	23 24 52.6	3.84	0 12.37	1.241	18 14 13.79
Tues.	26	18 18 52.47	11.093	23 23 6.5	5.01	0 42.12	1.237	18 18 10.35
Wed.	27	18 23 18.67	11.089	23 20 52.2	6.18	1 11.77	1.233	18 22 6.90
Thur.	28	18 27 44.72	11.083	23 18 9.8	7.35	1 41.26	1.227	18 26 3.46
Frid.	29	18 32 10.59	11.075	23 14 59.3	8.52	2 10.57	1.219	18 30 0.02
Sat.	30	18 36 36.25	11.065	23 11 20.9	9.69	2 39.67	1.209	18 33 56.58
Sun.	31	18 41 1.67	11.055	23 7 14.6	10.85	3 8.53	1.199	18 37 53.14
Mon.	32	18 45 26.84	11.043	S.23 2 40.7	+12.00	3 37.14	1.187	18 41 49.69

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour $+9^{s}.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	335	248 54 6.3	53 38.2	152.11	+0.63	9.9937289	−27.0	7 19 11.46
2	336	249 54 57.7	54 29.5	152.17	0.72	.9936651	26.1	7 15 15.54
3	337	250 55 50.6	55 22.2	152.23	0.79	.9936034	25.2	7 11 19.63
4	338	251 56 44.8	56 16.2	152.29	0.83	.9935438	24.4	7 7 23.72
5	339	252 57 40.3	57 11.5	152.34	0.85	.9934862	23.6	7 3 27.81
6	340	253 58 37.1	58 8.2	152.39	0.84	.9934306	22.8	6 59 31.89
7	341	254 59 35.2	59 6.1	152.44	0.80	.9933768	22.0	6 55 35.98
8	342	256 0 34.5	0 5.2	152.49	0.72	.9933247	21.3	6 51 40.07
9	343	257 1 34.9	1 5.4	152.54	0.62	.9932742	20.7	6 47 44.16
10	344	258 2 36.3	2 6.6	152.57	0.50	.9932251	20.1	6 43 48.25
11	345	259 3 38.6	3 8.7	152.61	0.37	.9931775	19.5	6 39 52.34
12	346	260 4 41.7	4 11.6	152.64	0.24	.9931314	18.9	6 35 56.43
13	347	261 5 45.5	5 15.3	152.67	+0.11	.9930867	18.3	6 32 0.52
14	348	262 6 50.0	6 19.6	152.70	−0.01	.9930437	17.6	6 28 4.60
15	349	263 7 55.1	7 24.5	152.72	0.11	.9930024	16.9	6 24 8.69
16	350	264 9 0.7	8 29.9	152.74	0.20	.9929627	16.2	6 20 12.78
17	351	265 10 6.7	9 35.7	152.75	0.26	.9929248	15.4	6 16 16.87
18	352	266 11 12.9	10 41.7	152.76	0.29	.9928888	14.6	6 12 20.95
19	353	267 12 19.3	11 48.0	152.77	0.29	.9928549	13.7	6 8 25.04
20	354	268 13 26.0	12 54.5	152.78	0.25	.9928233	12.7	6 4 29.13
21	355	269 14 32.9	14 1.2	152.79	0.19	.9927940	11.7	6 0 33.22
22	356	270 15 40.0	15 8.1	152.80	0.11	.9927671	10.7	5 56 37.30
23	357	271 16 47.2	16 15.1	152.81	−0.01	.9927428	9.6	5 52 41.39
24	358	272 17 54.6	17 22.3	152.81	+0.11	.9927212	8.4	5 48 45.48
25	359	273 19 2.1	18 29.6	152.82	0.24	.9927023	7.2	5 44 49.57
26	360	274 20 9.7	19 37.0	152.82	0.37	.9926862	6.0	5 40 53.65
27	361	275 21 17.5	20 44.7	152.83	0.50	.9926731	4.8	5 36 57.74
28	362	276 22 25.6	21 52.7	152.84	0.63	.9926628	3.7	5 33 1.83
29	363	277 23 34.1	23 0.9	152.86	0.73	.9926554	2.5	5 29 5.91
30	364	278 24 42.8	24 9.4	152.87	0.80	.9926508	1.4	5 25 9.99
31	365	279 25 51.8	25 18.2	152.88	0.84	.9926489	− 0.3	5 21 14.08
32	366	280 27 1.1	26 27.4	152.89	+0.85	9.9926496	+ 0.8	5 17 18.17

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour $9^s.8296$

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 47.4	14 49.4	54 10.1	+0.53	54 17.5	+0.70	15 49.1	2.02	18.8
2	14 52.0	14 55.2	54 27.0	0.88	54 38.7	1.07	16 36.9	1.96	19.8
3	14 59.0	15 3.5	54 52.7	1.26	55 9.0	1.46	17 23.4	1.91	20.8
4	15 8.5	15 14.2	55 27.6	1.64	55 48.4	1.83	18 8.9	1.88	21.8
5	15 20.4	15 27.2	56 11.4	2.00	56 36.3	2.15	18 54.1	1.89	22.8
6	15 34.4	15 42.1	57 2.8	2.28	57 30.8	2.38	19 39.8	1.94	23.8
7	15 49.9	15 57.9	57 59.7	2.44	58 29.1	2.45	20 27.3	2.03	24.8
8	16 5.9	16 13.6	58 58.4	2.41	59 26.8	2.31	21 17.7	2.18	25.8
9	16 21.0	16 27.6	59 53.6	2.15	60 18.1	1.92	22 12.3	2.37	26.8
10	16 33.5	16 38.3	60 39.6	1.64	60 57.3	1.31	23 11.4	2.57	27.8
11	16 42.0	16 44.4	61 10.8	0.93	61 19.6	+0.52	6		28.8
12	16 45.4	16 45.0	61 23.4	+0.10	61 22.0	−0.33	0 14.9	2.71	0.3
13	16 43.3	16 40.2	61 15.6	−0.74	61 4.5	1.11	1 20.6	2.74	1.3
14	16 36.0	16 30.8	60 49.0	1.45	60 29.8	1.74	2 25.6	2.64	2.3
15	16 24.7	16 18.0	60 7.6	1.96	59 42.9	2.13	3 27.0	2.46	3.3
16	16 10.9	16 3.5	59 16.6	2.24	58 49.4	2.29	4 23.5	2.25	4.3
17	15 56.0	15 48.5	58 21.8	2.29	57 54.5	2.25	5 15.2	2.06	5.3
18	15 41.3	15 34.3	57 27.9	2.17	57 2.4	2.07	6 2.8	1.91	6.3
19	15 27.7	15 21.6	56 38.2	1.95	56 15.7	1.81	6 47.7	1.83	7.3
20	15 15.9	15 10.7	55 54.8	1.66	55 35.8	1.51	7 31.0	1.79	8.3
21	15 6.1	15 1.9	55 18.6	1.36	55 3.2	1.21	8 13.9	1.79	9.3
22	14 58.2	14 54.9	54 49.6	1.06	54 37.7	0.92	8 57.4	1.84	10.3
23	14 52.2	14 49.8	54 27.6	0.78	54 19.0	0.65	9 42.2	1.90	11.3
24	14 47.9	14 46.4	54 12.0	0.52	54 6.4	0.41	10 28.6	1.97	12.3
25	14 45.3	14 44.5	54 2.2	0.29	53 59.3	−0.18	11 16.8	2.03	13.3
26	14 44.0	14 44.0	53 57.7	−0.08	53 57.4	+0.02	12 6.1	2.07	14.3
27	14 44.2	14 44.8	53 58.3	+0.13	54 0.4	0.23	12 56.0	2.07	15.3
28	14 45.7	14 47.0	54 3.9	0.34	54 8.7	0.46	13 45.5	2.04	16.3
29	14 48.7	14 50.8	54 15.0	0.58	54 22.7	0.71	14 33.7	1.98	17.3
30	14 53.4	14 56.4	54 32.0	0.84	54 42.9	0.98	15 20.4	1.91	18.3
31	14 59.8	15 3.7	54 55.6	1.13	55 10.0	1.28	16 5.7	1.86	19.3
32	15 8.1	15 13.0	55 26.2	+1.43	55 44.2	+1.58	16 50.0	1.83	20.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 57 32.99	2.1444	N.23 48 25.7	3.584
1	7 59 41.61	2.1429	23 44 47.3	3.696
2	8 1 50.13	2.1413	23 41 2.2	3.807
3	8 3 58.56	2.1397	23 37 10.4	3.918
4	8 6 6.89	2.1381	23 33 12.0	4.028
5	8 8 15.13	2.1365	23 29 7.0	4.139
6	8 10 23.27	2.1348	23 24 55.3	4.250
7	8 12 31.31	2.1330	23 20 37.0	4.359
8	8 14 39.24	2.1314	23 16 12.2	4.468
9	8 16 47.08	2.1296	23 11 40.8	4.577
10	8 18 54.80	2.1278	23 7 2.9	4.686
11	8 21 2.42	2.1261	23 2 18.5	4.794
12	8 23 9.93	2.1243	22 57 27.6	4.902
13	8 25 17.34	2.1224	22 52 30.2	5.010
14	8 27 24.62	2.1205	22 47 26.4	5.117
15	8 29 31.80	2.1186	22 42 16.2	5.223
16	8 31 38.85	2.1167	22 36 59.6	5.330
17	8 33 45.80	2.1148	22 31 36.6	5.436
18	8 35 52.62	2.1129	22 26 7.3	5.541
19	8 37 59.34	2.1108	22 20 31.7	5.646
20	8 40 5.92	2.1087	22 14 49.8	5.751
21	8 42 12.39	2.1069	22 9 1.6	5.855
22	8 44 18.75	2.1049	22 3 7.2	5.958
23	8 46 24.98	2.1027	N.21 57 6.6	6.062

SATURDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 48 31.08	2.1007	N.21 50 59.8	6.165
1	8 50 37.07	2.0987	21 44 46.8	6.267
2	8 52 42.93	2.0966	21 38 27.7	6.368
3	8 54 48.66	2.0945	21 32 2.6	6.469
4	8 56 54.27	2.0924	21 25 31.4	6.571
5	8 58 59.75	2.0904	21 18 54.1	6.672
6	9 1 5.11	2.0882	21 12 10.8	6.772
7	9 3 10.33	2.0860	21 5 21.5	6.871
8	9 5 15.44	2.0840	20 58 26.3	6.970
9	9 7 20.42	2.0819	20 51 25.1	7.069
10	9 9 25.27	2.0798	20 44 18.0	7.167
11	9 11 30.00	2.0777	20 37 5.1	7.263
12	9 13 34.59	2.0755	20 29 46.4	7.360
13	9 15 39.06	2.0734	20 22 21.9	7.457
14	9 17 43.40	2.0713	20 14 51.6	7.553
15	9 19 47.62	2.0693	20 7 15.5	7.649
16	9 21 51.71	2.0671	19 59 33.7	7.743
17	9 23 55.67	2.0650	19 51 46.3	7.838
18	9 25 59.51	2.0630	19 43 53.2	7.932
19	9 28 3.22	2.0609	19 35 54.5	8.024
20	9 30 6.81	2.0588	19 27 50.3	8.117
21	9 32 10.28	2.0567	19 19 40.5	8.209
22	9 34 13.62	2.0546	19 11 25.2	8.302
23	9 36 16.84	2.0527	19 3 4.3	8.394
24	9 38 19.94	2.0507	N.18 54 37.9	8.485

SUNDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 38 19.94	2.0507	N.18 54 37.9	8.485
1	9 40 22.92	2.0487	18 46 6.1	8.574
2	9 42 25.78	2.0467	18 37 29.0	8.663
3	9 44 28.52	2.0446	18 28 46.6	8.752
4	9 46 31.13	2.0426	18 19 58.8	8.841
5	9 48 33.63	2.0408	18 11 5.7	8.928
6	9 50 36.02	2.0389	18 2 7.4	9.015
7	9 52 38.29	2.0369	17 53 3.9	9.102
8	9 54 40.45	2.0350	17 43 55.2	9.188
9	9 56 42.50	2.0331	17 34 41.3	9.275
10	9 58 44.43	2.0313	17 25 22.2	9.360
11	10 0 46.26	2.0295	17 15 58.1	9.443
12	10 2 47.98	2.0277	17 6 29.0	9.527
13	10 4 49.59	2.0260	16 56 54.9	9.610
14	10 6 51.10	2.0243	16 47 15.8	9.693
15	10 8 52.50	2.0226	16 37 31.7	9.776
16	10 10 53.82	2.0209	16 27 42.6	9.858
17	10 12 55.02	2.0193	16 17 48.7	9.938
18	10 14 56.13	2.0178	16 7 50.0	10.018
19	10 16 57.15	2.0162	15 57 46.5	10.098
20	10 18 58.07	2.0146	15 47 38.2	10.178
21	10 20 58.90	2.0131	15 37 25.1	10.257
22	10 22 59.64	2.0117	15 27 7.3	10.335
23	10 25 0.30	2.0102	N.15 16 44.9	10.412

MONDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 27 0.87	2.0088	N.15 6 17.9	10.488
1	10 29 1.36	2.0074	14 55 46.3	10.565
2	10 31 1.76	2.0061	14 45 10.1	10.641
3	10 33 2.09	2.0049	14 34 29.4	10.715
4	10 35 2.35	2.0036	14 23 44.3	10.789
5	10 37 2.53	2.0024	14 12 54.7	10.863
6	10 39 2.64	2.0013	14 2 0.7	10.937
7	10 41 2.69	2.0002	13 51 2.3	11.010
8	10 43 2.66	1.9991	13 39 59.5	11.082
9	10 45 2.58	1.9981	13 28 52.4	11.153
10	10 47 2.43	1.9970	13 17 41.1	11.223
11	10 49 2.22	1.9961	13 6 25.6	11.293
12	10 51 1.96	1.9953	12 55 5.9	11.362
13	10 53 1.65	1.9944	12 43 42.1	11.431
14	10 55 1.29	1.9936	12 32 14.2	11.500
15	10 57 0.88	1.9929	12 20 42.1	11.568
16	10 59 0.43	1.9922	12 9 6.0	11.634
17	11 0 59.94	1.9915	11 57 26.0	11.699
18	11 2 59.41	1.9910	11 45 42.1	11.764
19	11 4 58.85	1.9905	11 33 54.3	11.829
20	11 6 58.26	1.9900	11 22 2.6	11.894
21	11 8 57.64	1.9895	11 10 7.0	11.958
22	11 10 56.99	1.9890	10 58 7.6	12.022
23	11 12 56.32	1.9887	10 46 4.4	12.084
24	11 14 55.63	1.9884	N.10 33 57.5	12.145

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 5.					THURSDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	11 14 55.63	1.9884	N.10 33 57.5	12.145	0	12 51 14.39	2.0510	S. 0 5 32.2	14.177
1	11 16 54.93	1.9883	10 21 47.0	12.205	1	12 53 17.54	2.0541	0 19 43.4	14.197
2	11 18 54.22	1.9881	10 9 32.9	12.265	2	12 55 20.88	2.0572	0 33 55.8	14.216
3	11 20 53.50	1.9880	9 57 15.2	12.325	3	12 57 24.41	2.0604	0 48 9.3	14.233
4	11 22 52.77	1.9879	9 44 53.9	12.384	4	12 59 28.13	2.0637	1 2 23.8	14.250
5	11 24 52.04	1.9880	9 32 29.1	12.442	5	13 1 32.05	2.0671	1 16 39.3	14.266
6	11 26 51.32	1.9881	9 20 0.9	12.499	6	13 3 36.18	2.0706	1 30 55.7	14.280
7	11 28 50.61	1.9882	9 7 29.3	12.556	7	13 5 40.52	2.0742	1 45 12.9	14.293
8	11 30 49.90	1.9883	8 54 54.2	12.613	8	13 7 45.08	2.0778	1 59 30.8	14.304
9	11 32 49.20	1.9885	8 42 15.8	12.668	9	13 9 49.85	2.0814	2 13 49.4	14.315
10	11 34 48.52	1.9887	8 29 34.1	12.722	10	13 11 54.85	2.0852	2 28 8.6	14.324
11	11 36 47.86	1.9892	8 16 49.2	12.774	11	13 14 0.08	2.0891	2 42 28.3	14.332
12	11 38 47.22	1.9896	8 4 1.2	12.827	12	13 16 5.54	2.0930	2 56 48.5	14.340
13	11 40 46.61	1.9902	7 51 10.0	12.879	13	13 18 11.24	2.0970	3 11 9.1	14.346
14	11 42 46.04	1.9908	7 38 15.7	12.931	14	13 20 17.18	2.1012	3 25 30.0	14.350
15	11 44 45.50	1.9914	7 25 18.3	12.982	15	13 22 23.38	2.1053	3 39 51.1	14.352
16	11 46 45.00	1.9920	7 12 17.8	13.032	16	13 24 29.82	2.1095	3 54 12.3	14.354
17	11 48 44.53	1.9927	6 59 14.4	13.081	17	13 26 36.52	2.1139	4 8 33.6	14.355
18	11 50 44.12	1.9936	6 46 8.1	13.129	18	13 28 43.48	2.1184	4 22 54.9	14.354
19	11 52 43.76	1.9945	6 32 58.9	13.177	19	13 30 50.72	2.1228	4 37 16.1	14.352
20	11 54 43.46	1.9954	6 19 46.8	13.225	20	13 32 58.22	2.1273	4 51 37.2	14.350
21	11 56 43.21	1.9964	6 6 31.9	13.271	21	13 35 5.99	2.1319	5 5 58.1	14.345
22	11 58 43.02	1.9975	5 53 14.3	13.315	22	13 37 14.05	2.1366	5 20 18.6	14.338
23	12 0 42.91	1.9987	N. 5 39 54.1	13.359	23	13 39 22.39	2.1414	S. 5 34 38.7	14.331
	WEDNESDAY 6.					FRIDAY 8.			
0	12 2 42.87	1.9999	N. 5 26 31.2	13.403	0	13 41 31.02	2.1463	S. 5 48 58.3	14.322
1	12 4 42.90	2.0012	5 13 5.7	13.446	1	13 43 39.95	2.1512	6 3 17.3	14.311
2	12 6 43.01	2.0026	4 59 37.7	13.487	2	13 45 49.17	2.1563	6 17 35.6	14.299
3	12 8 43.21	2.0040	4 46 7.2	13.528	3	13 47 58.71	2.1615	6 31 53.2	14.286
4	12 10 43.49	2.0055	4 32 34.3	13.568	4	13 50 8.55	2.1666	6 46 9.9	14.271
5	12 12 43.87	2.0070	4 18 59.0	13.607	5	13 52 18.70	2.1719	7 0 25.7	14.254
6	12 14 44.34	2.0086	4 5 21.4	13.646	6	13 54 29.17	2.1772	7 14 40.4	14.236
7	12 16 44.91	2.0104	3 51 41.5	13.684	7	13 56 39.97	2.1826	7 28 54.0	14.217
8	12 18 45.59	2.0122	3 37 59.3	13.722	8	13 58 51.09	2.1880	7 43 6.4	14.196
9	12 20 46.38	2.0141	3 24 14.9	13.757	9	14 1 2.53	2.1936	7 57 17.5	14.173
10	12 22 47.28	2.0160	3 10 28.4	13.792	10	14 3 14.31	2.1993	8 11 27.2	14.149
11	12 24 48.30	2.0181	2 56 39.9	13.825	11	14 5 26.44	2.2049	8 25 35.4	14.123
12	12 26 49.45	2.0202	2 42 49.4	13.858	12	14 7 38.90	2.2106	8 39 42.0	14.096
13	12 28 50.72	2.0223	2 28 56.9	13.891	13	14 9 51.71	2.2165	8 53 46.9	14.067
14	12 30 52.12	2.0245	2 15 2.5	13.922	14	14 12 4.88	2.2224	9 7 50.0	14.037
15	12 32 53.66	2.0268	2 1 6.3	13.952	15	14 14 18.40	2.2284	9 21 51.3	14.005
16	12 34 55.34	2.0292	1 47 8.3	13.981	16	14 16 32.29	2.2344	9 35 50.6	13.970
17	12 36 57.17	2.0316	1 33 8.6	14.008	17	14 18 46.53	2.2405	9 49 47.7	13.933
18	12 38 59.14	2.0341	1 19 7.3	14.035	18	14 21 1.15	2.2467	10 3 42.6	13.896
19	12 41 1.27	2.0367	1 5 4.4	14.062	19	14 23 16.13	2.2528	10 17 35.2	13.857
20	12 43 3.55	2.0395	0 50 59.9	14.087	20	14 25 31.49	2.2591	10 31 25.4	13.816
21	12 45 6.00	2.0423	0 36 53.9	14.112	21	14 27 47.23	2.2656	10 45 13.1	13.773
22	12 47 8.62	2.0452	0 22 46.5	14.134	22	14 30 3.36	2.2721	10 58 58.2	13.729
23	12 49 11.42	2.0481	N. 0 8 37.8	14.156	23	14 32 19.88	2.2785	11 12 40.6	13.682
24	12 51 14.39	2.0510	S. 0 5 32.2	14.177	24	14 34 36.78	2.2849	S. 11 26 20.1	13.634

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 34 36.78	2.2849	S. 11 26 20.1	13.634
1	14 36 54.07	2.2916	11 39 56.7	13.584
2	14 39 11.77	2.2983	11 53 30.2	13.532
3	14 41 29.87	2.3050	12 7 0.6	13.479
4	14 43 48.37	2.3117	12 20 27.7	13.423
5	14 46 7.27	2.3185	12 33 51.4	13.366
6	14 48 26.59	2.3255	12 47 11.6	13.307
7	14 50 46.33	2.3324	13 0 28.2	13.245
8	14 53 6.47	2.3393	13 13 41.0	13.182
9	14 55 27.04	2.3463	13 26 50.0	13.117
10	14 57 48.02	2.3533	13 39 55.0	13.049
11	15 0 9.44	2.3604	13 52 55.9	12.980
12	15 2 31.27	2.3675	14 5 52.6	12.909
13	15 4 53.53	2.3747	14 18 45.0	12.846
14	15 7 16.23	2.3819	14 31 32.9	12.761
15	15 9 39.36	2.3891	14 44 16.3	12.684
16	15 12 2.92	2.3963	14 56 55.0	12.605
17	15 14 26.92	2.4037	15 9 28.9	12.523
18	15 16 51.36	2.4110	15 21 57.8	12.440
19	15 19 16.24	2.4184	15 34 21.7	12.356
20	15 21 41.56	2.4257	15 46 40.5	12.269
21	15 24 7.32	2.4330	15 58 54.0	12.180
22	15 26 33.52	2.4405	16 11 2.1	12.088
23	15 29 0.17	2.4479	S. 16 23 4.6	11.994

SUNDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 31 27.27	2.4553	S. 16 35 1.4	11.898
1	15 33 54.81	2.4627	16 46 52.4	11.801
2	15 36 22.79	2.4700	16 58 37.5	11.702
3	15 38 51.21	2.4775	17 10 16.6	11.600
4	15 41 20.09	2.4850	17 21 49.5	11.497
5	15 43 49.41	2.4924	17 33 16.2	11.392
6	15 46 19.17	2.4997	17 44 36.5	11.283
7	15 48 49.37	2.5072	17 55 50.2	11.172
8	15 51 20.03	2.5146	18 6 57.2	11.060
9	15 53 51.12	2.5219	18 17 57.4	10.946
10	15 56 22.66	2.5292	18 28 50.7	10.830
11	15 58 54.63	2.5365	18 39 37.0	10.712
12	16 1 27.04	2.5439	18 50 16.1	10.591
13	16 3 59.89	2.5511	19 0 47.9	10.468
14	16 6 33.17	2.5583	19 11 12.3	10.344
15	16 9 6.89	2.5655	19 21 29.2	10.218
16	16 11 41.02	2.5726	19 31 38.5	10.090
17	16 14 15.60	2.5797	19 41 40.0	9.959
18	16 16 50.59	2.5867	19 51 33.6	9.827
19	16 19 26.01	2.5937	20 1 19.2	9.692
20	16 22 1.83	2.6006	20 10 56.6	9.554
21	16 24 38.08	2.6075	20 20 25.7	9.416
22	16 27 14.73	2.6144	20 29 46.5	9.276
23	16 29 51.80	2.6212	20 38 58.8	9.134
24	16 32 29.27	2.6278	S. 20 48 2.6	8.991

MONDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 32 29.27	2.6278	S. 20 48 2.6	8.991
1	16 35 7.14	2.6343	20 56 57.7	8.844
2	16 37 45.39	2.6408	21 5 43.9	8.695
3	16 40 24.03	2.6472	21 14 21.1	8.544
4	16 43 3.05	2.6535	21 22 49.2	8.392
5	16 45 42.45	2.6597	21 31 8.2	8.240
6	16 48 22.22	2.6658	21 39 18.0	8.085
7	16 51 2.35	2.6718	21 47 18.4	7.928
8	16 53 42.84	2.6777	21 55 9.4	7.770
9	16 56 23.68	2.6836	22 2 50.8	7.609
10	16 59 4.87	2.6894	22 10 22.5	7.447
11	17 1 46.40	2.6950	22 17 44.4	7.283
12	17 4 28.26	2.7003	22 24 56.4	7.117
13	17 7 10.44	2.7056	22 31 58.4	6.950
14	17 9 52.94	2.7109	22 38 50.4	6.782
15	17 12 35.75	2.7160	22 45 32.3	6.612
16	17 15 18.86	2.7209	22 52 3.9	6.440
17	17 18 2.25	2.7256	22 58 25.1	6.267
18	17 20 45.93	2.7303	23 4 35.9	6.093
19	17 23 29.89	2.7348	23 10 36.3	5.919
20	17 26 14.11	2.7392	23 16 26.2	5.742
21	17 28 58.60	2.7434	23 22 5.4	5.563
22	17 31 43.32	2.7473	23 27 33.8	5.383
23	17 34 28.28	2.7512	S. 23 32 51.4	5.203

TUESDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 37 13.47	2.7550	S. 23 37 58.2	5.022
1	17 39 58.89	2.7586	23 42 54.0	4.839
2	17 42 44.50	2.7620	23 47 38.8	4.655
3	17 45 30.32	2.7652	23 52 12.6	4.471
4	17 48 16.33	2.7682	23 56 35.3	4.285
5	17 51 2.50	2.7710	24 0 46.8	4.098
6	17 53 48.85	2.7737	24 4 47.0	3.910
7	17 56 35.35	2.7762	24 8 36.0	3.722
8	17 59 22.00	2.7785	24 12 13.7	3.533
9	18 2 8.77	2.7806	24 15 40.0	3.343
10	18 4 55.68	2.7826	24 18 54.9	3.153
11	18 7 42.68	2.7843	24 21 58.3	2.962
12	18 10 29.79	2.7859	24 24 50.3	2.771
13	18 13 16.99	2.7873	24 27 30.8	2.578
14	18 16 4.26	2.7884	24 29 59.7	2.386
15	18 18 51.60	2.7894	24 32 17.1	2.193
16	18 21 39.00	2.7903	24 34 22.9	2.000
17	18 24 26.43	2.7908	24 36 17.1	1.807
18	18 27 13.89	2.7912	24 37 59.7	1.613
19	18 30 1.37	2.7914	24 39 30.7	1.420
20	18 32 48.85	2.7913	24 40 50.1	1.226
21	18 35 36.32	2.7911	24 41 57.8	1.032
22	18 38 23.78	2.7908	24 42 53.9	0.838
23	18 41 11.21	2.7901	24 43 38.3	0.643
24	18 43 58.59	2.7892	S. 24 44 11.1	0.450

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 13.					**FRIDAY 15.**				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	18 43 58.59	2.7892	S. 24 44 11.1	0.450	0	20 53 34.14	2.5557	S. 21 36 12.8	7.815
1	18 46 45.91	2.7882	24 44 32.3	0.257	1	20 56 7.26	2.5483	21 28 19.8	7.952
2	18 49 33.18	2.7870	24 44 41.9	−0.063	2	20 58 39.93	2.5407	21 20 18.6	8.087
3	18 52 20.36	2.7856	24 44 39.9	+0.130	3	21 1 12.14	2.5330	21 12 9.4	8.219
4	18 55 7.46	2.7840	24 44 26.3	0.323	4	21 3 43.88	2.5253	21 3 52.3	8.350
5	18 57 54.45	2.7822	24 44 1.1	0.516	5	21 6 15.17	2.5175	20 55 27.4	8.478
6	19 0 41.33	2.7802	24 43 24.4	0.707	6	21 8 45.98	2.5096	20 46 54.9	8.605
7	19 3 28.08	2.7781	24 42 36.2	0.899	7	21 11 16.32	2.5018	20 38 14.8	8.731
8	19 6 14.70	2.7757	24 41 36.5	1.090	8	21 13 46.20	2.4940	20 29 27.2	8.855
9	19 9 1.17	2.7732	24 40 25.4	1.280	9	21 16 15.60	2.4860	20 20 32.2	8.977
10	19 11 47.48	2.7705	24 39 2.9	1.470	10	21 18 44.52	2.4781	20 11 30.0	9.096
11	19 14 33.63	2.7676	24 37 29.0	1.659	11	21 21 12.97	2.4702	20 2 20.7	9.214
12	19 17 19.59	2.7645	24 35 43.8	1.847	12	21 23 40.94	2.4622	19 53 4.3	9.331
13	19 20 5.36	2.7611	24 33 47.3	2.035	13	21 26 8.44	2.4543	19 43 41.0	9.445
14	19 22 50.92	2.7576	24 31 39.6	2.222	14	21 28 35.46	2.4463	19 34 10.9	9.557
15	19 25 36.27	2.7540	24 29 20.7	2.408	15	21 31 1.99	2.4382	19 24 34.2	9.667
16	19 28 21.40	2.7502	24 26 50.6	2.594	16	21 33 28.05	2.4303	19 14 50.9	9.776
17	19 31 6.29	2.7461	24 24 9.4	2.778	17	21 35 53.63	2.4225	19 5 1.1	9.883
18	19 33 50.93	2.7420	24 21 17.3	2.960	18	21 38 18.75	2.4146	18 55 5.0	9.988
19	19 36 35.32	2.7376	24 18 14.2	3.142	19	21 40 43.38	2.4066	18 45 2.6	10.091
20	19 39 19.44	2.7330	24 15 0.2	3.323	20	21 43 7.54	2.3987	18 34 54.1	10.192
21	19 42 3.29	2.7284	24 11 35.4	3.502	21	21 45 31.22	2.3907	18 24 39.6	10.291
22	19 44 46.86	2.7238	24 7 59.9	3.681	22	21 47 54.42	2.3828	18 14 19.2	10.389
23	19 47 30.14	2.7189	S. 24 4 13.7	3.859	23	21 50 17.16	2.3751	S. 18 3 52.9	10.486
THURSDAY 14.					**SATURDAY 16.**				
0	19 50 13.12	2.7137	S. 24 0 16.8	4.036	0	21 52 39.43	2.3672	S. 17 53 20.9	10.580
1	19 52 55.78	2.7084	23 56 9.4	4.211	1	21 55 1.22	2.3592	17 42 43.3	10.672
2	19 55 38.13	2.7030	23 51 51.5	4.384	2	21 57 22.53	2.3513	17 32 0.3	10.762
3	19 58 20.14	2.6974	23 47 23.3	4.556	3	21 59 43.38	2.3436	17 21 11.9	10.851
4	20 1 1.82	2.6918	23 42 44.8	4.727	4	22 2 3.77	2.3359	17 10 18.2	10.938
5	20 3 43.15	2.6859	23 37 56.1	4.896	5	22 4 23.69	2.3282	16 59 19.4	11.023
6	20 6 24.13	2.6800	23 32 57.3	5.064	6	22 6 43.15	2.3206	16 48 15.5	11.107
7	20 9 4.75	2.6740	23 27 48.4	5.232	7	22 9 2.16	2.3130	16 37 6.6	11.188
8	20 11 45.01	2.6679	23 22 29.5	5.397	8	22 11 20.71	2.3054	16 25 52.9	11.267
9	20 14 24.89	2.6615	23 17 0.7	5.561	9	22 13 38.81	2.2979	16 14 34.5	11.346
10	20 17 4.39	2.6551	23 11 22.2	5.723	10	22 15 56.46	2.2903	16 3 11.4	11.423
11	20 19 43.50	2.6487	23 5 34.0	5.883	11	22 18 13.65	2.2827	15 51 43.8	11.496
12	20 22 22.23	2.6420	22 59 36.3	6.041	12	22 20 30.39	2.2752	15 40 11.7	11.571
13	20 25 0.54	2.6352	22 53 29.1	6.198	13	22 22 46.69	2.2680	15 28 35.3	11.642
14	20 27 38.46	2.6284	22 47 12.5	6.354	14	22 25 2.55	2.2608	15 16 54.6	11.712
15	20 30 15.96	2.6215	22 40 46.6	6.507	15	22 27 17.98	2.2536	15 5 9.8	11.781
16	20 32 53.04	2.6146	22 34 11.6	6.659	16	22 29 32.98	2.2464	14 53 20.9	11.848
17	20 35 29.71	2.6075	22 27 27.5	6.810	17	22 31 47.54	2.2392	14 41 28.0	11.913
18	20 38 5.94	2.6003	22 20 34.4	6.959	18	22 34 1.68	2.2321	14 29 31.3	11.977
19	20 40 41.74	2.5931	22 13 32.4	7.107	19	22 36 15.40	2.2251	14 17 30.8	12.038
20	20 43 17.11	2.5858	22 6 21.6	7.252	20	22 38 28.69	2.2181	14 5 26.7	12.096
21	20 45 52.04	2.5785	21 59 2.1	7.396	21	22 40 41.57	2.2112	13 53 19.0	12.157
22	20 48 26.53	2.5711	21 51 34.1	7.537	22	22 42 54.04	2.2043	13 41 7.8	12.215
23	20 51 0.57	2.5634	21 43 57.6	7.677	23	22 45 6.09	2.1976	13 28 53.2	12.271
24	20 53 34.14	2.5557	S. 21 36 12.8	7.815	24	22 47 17.75	2.1910	S. 13 16 35.3	12.325

GREENWICH MEAN TIME

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 47 17.75	2.1910	S. 13 16 35.3	12.325
1	22 49 29.00	2.1843	13 4 14.2	12.377
2	22 51 39.85	2.1777	12 51 50.0	12.429
3	22 53 50.33	2.1713	12 39 22.7	12.479
4	22 56 0.40	2.1648	12 26 52.5	12.527
5	22 58 10.10	2.1584	12 14 19.4	12.574
6	23 0 19.41	2.1520	12 1 43.6	12.619
7	23 2 28.34	2.1458	11 49 5.1	12.664
8	23 4 36.90	2.1398	11 36 23.9	12.708
9	23 6 45.11	2.1338	11 23 40.1	12.750
10	23 8 52.94	2.1277	11 10 53.9	12.789
11	23 11 0.43	2.1218	10 58 5.4	12.827
12	23 13 7.55	2.1160	10 45 14.7	12.863
13	23 15 14.34	2.1101	10 32 21.8	12.900
14	23 17 20.77	2.1043	10 19 26.7	12.936
15	23 19 26.86	2.0988	10 6 29.5	12.969
16	23 21 32.62	2.0932	9 53 30.4	13.001
17	23 23 38.04	2.0877	9 40 29.4	13.032
18	23 25 43.15	2.0824	9 27 26.6	13.061
19	23 27 47.93	2.0772	9 14 22.1	13.089
20	23 29 52.41	2.0719	9 1 15.9	13.117
21	23 31 56.56	2.0666	8 48 8.0	13.144
22	23 34 0.40	2.0615	8 34 58.6	13.168
23	23 36 3.94	2.0566	S. 8 21 47.8	13.191

MONDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 38 7.19	2.0517	S. 8 8 35.7	13.213
1	23 40 10.15	2.0468	7 55 22.3	13.234
2	23 42 12.81	2.0420	7 42 7.6	13.255
3	23 44 15.19	2.0374	7 28 51.7	13.274
4	23 46 17.30	2.0329	7 15 34.7	13.292
5	23 48 19.14	2.0284	7 2 16.6	13.309
6	23 50 20.71	2.0239	6 48 57.6	13.324
7	23 52 22.01	2.0195	6 35 37.7	13.338
8	23 54 23.05	2.0154	6 22 17.0	13.351
9	23 56 23.85	2.0112	6 8 55.6	13.363
10	23 58 24.40	2.0071	5 55 33.4	13.376
11	0 0 24.70	2.0030	5 42 10.5	13.387
12	0 2 24.75	1.9990	5 28 47.0	13.396
13	0 4 24.58	1.9952	5 15 23.0	13.403
14	0 6 24.17	1.9914	5 1 58.6	13.409
15	0 8 23.55	1.9876	4 48 33.9	13.415
16	0 10 22.69	1.9840	4 35 8.8	13.422
17	0 12 21.63	1.9805	4 21 43.3	13.427
18	0 14 20.35	1.9771	4 8 17.5	13.431
19	0 16 18.88	1.9737	3 54 51.6	13.432
20	0 18 17.19	1.9703	3 41 25.7	13.433
21	0 20 15.32	1.9671	3 27 59.7	13.433
22	0 22 13.25	1.9640	3 14 33.7	13.432
23	0 24 11.00	1.9609	3 1 7.8	13.431
24	0 26 8.56	1.9579	S. 2 47 42.0	13.428

TUESDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 26 8.56	1.9579	S. 2 47 42.0	13.428
1	0 28 5.95	1.9550	2 34 16.4	13.425
2	0 30 3.16	1.9522	2 20 51.0	13.421
3	0 32 0.22	1.9495	2 7 25.9	13.416
4	0 33 57.10	1.9468	1 54 1.1	13.410
5	0 35 53.83	1.9442	1 40 36.7	13.403
6	0 37 50.40	1.9417	1 27 12.8	13.395
7	0 39 46.83	1.9393	1 13 49.3	13.387
8	0 41 43.11	1.9369	1 0 26.3	13.378
9	0 43 39.25	1.9345	0 47 3.9	13.367
10	0 45 35.26	1.9323	0 33 42.2	13.356
11	0 47 31.13	1.9301	0 20 21.2	13.343
12	0 49 26.87	1.9281	S. 0 7 1.0	13.330
13	0 51 22.50	1.9262	N. 0 6 18.4	13.317
14	0 53 18.01	1.9242	0 19 37.0	13.302
15	0 55 13.41	1.9224	0 32 54.7	13.287
16	0 57 8.70	1.9206	0 46 11.5	13.272
17	0 59 3.88	1.9189	0 59 27.3	13.254
18	1 0 58.97	1.9174	1 12 42.0	13.236
19	1 2 53.97	1.9160	1 25 55.6	13.218
20	1 4 48.88	1.9145	1 39 8.1	13.199
21	1 6 43.70	1.9129	1 52 19.5	13.179
22	1 8 38.42	1.9116	2 5 29.6	13.158
23	1 10 33.08	1.9104	N. 2 18 38.4	13.136

WEDNESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 12 27.67	1.9092	N. 2 31 45.9	13.113
1	1 14 22.19	1.9080	2 44 52.0	13.090
2	1 16 16.64	1.9070	2 57 56.7	13.067
3	1 18 11.03	1.9061	3 11 0.0	13.043
4	1 20 5.37	1.9052	3 24 1.8	13.017
5	1 21 59.66	1.9043	3 37 2.0	12.989
6	1 23 53.88	1.9035	3 50 0.5	12.962
7	1 25 48.07	1.9028	4 2 57.4	12.934
8	1 27 42.23	1.9023	4 15 52.6	12.906
9	1 29 36.35	1.9017	4 28 46.1	12.877
10	1 31 30.43	1.9012	4 41 37.9	12.848
11	1 33 24.49	1.9008	4 54 27.9	12.815
12	1 35 18.53	1.9005	5 7 16.0	12.786
13	1 37 12.55	1.9002	5 20 2.2	12.753
14	1 39 6.55	1.8999	5 32 46.4	12.720
15	1 41 0.54	1.8997	5 45 28.6	12.687
16	1 42 54.51	1.8996	5 58 8.8	12.653
17	1 44 48.49	1.8996	6 10 47.0	12.618
18	1 46 42.46	1.8996	6 23 23.0	12.582
19	1 48 36.44	1.8997	6 35 56.8	12.545
20	1 50 30.43	1.8999	6 48 28.4	12.508
21	1 52 24.43	1.9000	7 0 57.8	12.471
22	1 54 18.43	1.9003	7 13 24.9	12.432
23	1 56 12.47	1.9007	7 25 49.6	12.393
24	1 58 6.52	1.9011	N. 7 38 12.0	12.353

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 58 6.52	1.9011	N. 7 38 12.0	12.353
1	2 0 0.60	1.9016	7 50 32.0	12.312
2	2 1 54.71	1.9021	8 2 49.5	12.270
3	2 3 48.85	1.9027	8 15 4.4	12.227
4	2 5 43.03	1.9033	8 27 16.8	12.185
5	2 7 37.24	1.9039	8 39 26.6	12.142
6	2 9 31.50	1.9047	8 51 33.8	12.098
7	2 11 25.80	1.9055	9 3 38.4	12.054
8	2 13 20.16	1.9064	9 15 40.3	12.008
9	2 15 14.57	1.9071	9 27 39.4	11.962
10	2 17 9.03	1.9081	9 39 35.7	11.914
11	2 19 3.55	1.9092	9 51 29.1	11.867
12	2 20 58.14	1.9104	10 3 19.7	11.819
13	2 22 52.80	1.9115	10 15 7.4	11.770
14	2 24 47.52	1.9126	10 26 52.1	11.720
15	2 26 42.32	1.9139	10 38 33.8	11.669
16	2 28 37.18	1.9152	10 50 12.4	11.617
17	2 30 32.13	1.9165	11 1 47.9	11.566
18	2 32 27.16	1.9179	11 13 20.3	11.514
19	2 34 22.27	1.9194	11 24 49.6	11.461
20	2 36 17.48	1.9209	11 36 15.6	11.406
21	2 38 12.77	1.9223	11 47 38.3	11.351
22	2 40 8.15	1.9238	11 58 57.7	11.297
23	2 42 3.63	1.9254	N.12 10 13.8	11.241

FRIDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 43 59.20	1.9271	N.12 21 26.6	11.184
1	2 45 54.88	1.9289	12 32 35.9	11.126
2	2 47 50.67	1.9306	12 43 41.7	11.067
3	2 49 46.56	1.9323	12 54 44.0	11.009
4	2 51 42.55	1.9341	13 5 42.8	10.951
5	2 53 38.66	1.9360	13 16 38.1	10.891
6	2 55 34.88	1.9380	13 27 29.7	10.829
7	2 57 31.23	1.9401	13 38 17.6	10.767
8	2 59 27.69	1.9420	13 49 1.8	10.705
9	3 1 24.27	1.9439	13 59 42.2	10.642
10	3 3 20.96	1.9460	14 10 18.8	10.578
11	3 5 17.79	1.9482	14 20 51.6	10.514
12	3 7 14.75	1.9504	14 31 20.5	10.449
13	3 9 11.84	1.9526	14 41 45.5	10.383
14	3 11 9.06	1.9548	14 52 6.5	10.317
15	3 13 6.41	1.9570	15 2 23.5	10.250
16	3 15 3.90	1.9593	15 12 36.5	10.182
17	3 17 1.53	1.9616	15 22 45.4	10.113
18	3 18 59.30	1.9640	15 32 50.1	10.044
19	3 20 57.20	1.9664	15 42 50.7	9.975
20	3 22 55.25	1.9688	15 52 47.1	9.904
21	3 24 53.45	1.9712	16 2 39.2	9.833
22	3 26 51.79	1.9736	16 12 27.0	9.761
23	3 28 50.28	1.9761	16 22 10.5	9.688
24	3 30 48.92	1.9784	N.16 31 49.6	9.615

SATURDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 30 48.92	1.9786	N.16 31 49.6	9.615
1	3 32 47.71	1.9811	16 41 24.3	9.541
2	3 34 46.66	1.9837	16 50 54.5	9.466
3	3 36 45.76	1.9862	17 0 20.2	9.391
4	3 38 45.01	1.9889	17 9 41.4	9.315
5	3 40 44.42	1.9915	17 18 58.0	9.238
6	3 42 43.99	1.9941	17 28 10.0	9.161
7	3 44 43.71	1.9967	17 37 17.3	9.082
8	3 46 43 60	1.9995	17 46 19.9	9.003
9	3 48 43.65	2.0022	17 55 17.7	8.923
10	3 50 43.86	2.0049	18 4 10.7	8.843
11	3 52 44.24	2.0076	18 12 58.9	8.763
12	3 54 44.78	2.0103	18 21 42.3	8.682
13	3 56 45.48	2.0131	18 30 20.8	8.600
14	3 58 46.35	2.0160	18 38 54.3	8.516
15	4 0 47.39	2.0187	18 47 22.7	8.432
16	4 2 48.59	2.0214	18 55 46.1	8.348
17	4 4 49.96	2.0242	19 4 4.5	8.264
18	4 6 51.50	2.0270	19 12 17.8	8.178
19	4 8 53.20	2.0297	19 20 25.9	8.092
20	4 10 55.07	2.0325	19 28 28.8	8.005
21	4 12 57.10	2.0353	19 36 26.5	7.917
22	4 14 59.31	2.0381	19 44 18.9	7.829
23	4 17 1.68	2.0410	N.19 52 6.0	7.740

SUNDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 19 4.22	2.0438	N.19 59 47.7	7.650
1	4 21 6.93	2.0466	20 7 24.0	7.560
2	4 23 9.81	2.0494	20 14 54.9	7.470
3	4 25 12.86	2.0522	20 22 20.4	7.379
4	4 27 16.08	2.0550	20 29 40.4	7.287
5	4 29 19.46	2.0577	20 36 54.8	7.193
6	4 31 23.01	2.0605	20 44 3.6	7.100
7	4 33 26.73	2.0633	20 51 6.8	7.006
8	4 35 30.61	2.0662	20 58 4.3	6.912
9	4 37 34.67	2.0689	21 4 56.2	6.818
10	4 39 38.88	2.0715	21 11 42.4	6.722
11	4 41 43.25	2.0743	21 18 22.8	6.624
12	4 43 47.79	2.0770	21 24 57.3	6.527
13	4 45 52.49	2.0797	21 31 26.0	6.429
14	4 47 57.35	2.0824	21 37 48.8	6.331
15	4 50 2.38	2.0851	21 44 5.7	6.232
16	4 52 7.57	2.0877	21 50 16.7	6.134
17	4 54 12.91	2.0903	21 56 21.8	6.035
18	4 56 18.40	2.0929	22 2 20.9	5.934
19	4 58 24.05	2.0955	22 8 13.9	5.833
20	5 0 29.86	2.0982	22 14 0.8	5.731
21	5 2 35.83	2.1007	22 19 41.6	5.628
22	5 4 41.94	2.1031	22 25 16.2	5.525
23	5 6 48.20	2.1056	22 30 44.6	5.422
24	5 8 54.61	2.1080	N.22 36 6.8	5.319

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 8 54.61	2.1080	N.22 36 6.8	5.319
1	5 11 1.16	2.1105	22 41 22.8	5.214
2	5 13 7.87	2.1129	22 46 32.5	5.109
3	5 15 14.71	2.1153	22 51 35.9	5.004
4	5 17 21.70	2.1176	22 56 33.0	4.899
5	5 19 28.82	2.1199	23 1 23.8	4.793
6	5 21 36.08	2.1221	23 6 8.2	4.686
7	5 23 43.47	2.1243	23 10 46.1	4.578
8	5 25 51.00	2.1265	23 15 17.6	4.471
9	5 27 58.65	2.1287	23 19 42.6	4.362
10	5 30 6.44	2.1308	23 24 1.1	4.254
11	5 32 14.35	2.1328	23 28 13.1	4.145
12	5 34 22.38	2.1348	23 32 18.5	4.035
13	5 36 30.53	2.1369	23 36 17.3	3.925
14	5 38 38.81	2.1389	23 40 9.5	3.815
15	5 40 47.19	2.1407	23 43 55.1	3.705
16	5 42 55.69	2.1425	23 47 34.1	3.594
17	5 45 4.29	2.1444	23 51 6.4	3.482
18	5 47 13.01	2.1462	23 54 32.0	3.370
19	5 49 21.83	2.1478	23 57 50.8	3.258
20	5 51 30.75	2.1495	24 1 2.9	3.146
21	5 53 39.77	2.1511	24 4 8.3	3.033
22	5 55 48.88	2.1527	24 7 6.9	2.920
23	5 57 58.10	2.1542	N.24 9 58.7	2.807

TUESDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 0 7.39	2.1556	N.24 12 43.7	2.693
1	6 2 16.78	2.1571	24 15 21.8	2.578
2	6 4 26.25	2.1585	24 17 53.1	2.464
3	6 6 35.80	2.1598	24 20 17.5	2.349
4	6 8 45.42	2.1610	24 22 35.0	2.234
5	6 10 55.13	2.1622	24 24 45.6	2.119
6	6 13 4.89	2.1633	24 26 49.3	2.004
7	6 15 14.72	2.1645	24 28 46.1	1.888
8	6 17 24.63	2.1655	24 30 35.9	1.772
9	6 19 34.59	2.1664	24 32 18.7	1.656
10	6 21 44.60	2.1674	24 33 54.6	1.540
11	6 23 54.68	2.1683	24 35 23.5	1.423
12	6 26 4.79	2.1691	24 36 45.4	1.307
13	6 28 14.95	2.1699	24 38 0.3	1.190
14	6 30 25.17	2.1706	24 39 8.2	1.073
15	6 32 35.42	2.1713	24 40 9.1	0.957
16	6 34 45.72	2.1717	24 41 3.0	0.839
17	6 36 56.03	2.1722	24 41 49.8	0.721
18	6 39 6.38	2.1727	24 42 29.5	0.603
19	6 41 16.75	2.1731	24 43 2.2	0.486
20	6 43 27.15	2.1734	24 43 27.9	0.369
21	6 45 37.56	2.1737	24 43 46.5	0.251
22	6 47 47.99	2.1740	24 43 58.0	0.133
23	6 49 58.41	2.1742	24 44 2.5	+0.016
24	6 52 8.89	2.1742	N.24 44 0.0	−0.101

WEDNESDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 52 8.89	2.1742	N.24 44 0.0	0.101
1	6 54 19.34	2.1742	24 43 50.4	0.219
2	6 56 29.79	2.1742	24 43 33.7	0.337
3	6 58 40.24	2.1742	24 43 9.9	0.455
4	7 0 50.69	2.1740	24 42 39.1	0.572
5	7 3 1.12	2.1738	24 42 1.3	0.689
6	7 5 11.54	2.1735	24 41 16.4	0.807
7	7 7 21.94	2.1732	24 40 24.4	0.925
8	7 9 32.32	2.1728	24 39 25.4	1.042
9	7 11 42.67	2.1723	24 38 19.4	1.159
10	7 13 53.00	2.1719	24 37 6.3	1.277
11	7 16 3.30	2.1713	24 35 46.2	1.394
12	7 18 13.56	2.1707	24 34 19.0	1.512
13	7 20 23.78	2.1700	24 32 44.8	1.628
14	7 22 33.96	2.1693	24 31 3.6	1.744
15	7 24 44.10	2.1685	24 29 15.5	1.860
16	7 26 54.18	2.1676	24 27 20.4	1.977
17	7 29 4.21	2.1668	24 25 18.3	2.093
18	7 31 14.19	2.1659	24 23 9.2	2.209
19	7 33 24.11	2.1649	24 20 53.2	2.325
20	7 35 33.97	2.1639	24 18 30.2	2.441
21	7 37 43.77	2.1627	24 16 0.3	2.556
22	7 39 53.49	2.1614	24 13 23.5	2.671
23	7 42 3.14	2.1602	N.24 10 39.8	2.786

THURSDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 44 12.72	2.1590	N.24 7 49.2	2.901
1	7 46 22.22	2.1577	24 4 51.7	3.015
2	7 48 31.65	2.1563	24 1 47.4	3.128
3	7 50 40.94	2.1549	23 58 36.3	3.242
4	7 52 50.23	2.1535	23 55 18.4	3.355
5	7 54 59.40	2.1521	23 51 53.7	3.468
6	7 57 8.48	2.1505	23 48 22.2	3.582
7	7 59 17.46	2.1488	23 44 43.9	3.694
8	8 1 26.33	2.1471	23 40 58.9	3.806
9	8 3 35.11	2.1454	23 37 7.2	3.917
10	8 5 43.78	2.1437	23 33 8.9	4.027
11	8 7 52.36	2.1420	23 29 3.9	4.139
12	8 10 0.82	2.1402	23 24 52.2	4.250
13	8 12 9.18	2.1384	23 20 33.9	4.360
14	8 14 17.42	2.1365	23 16 9.0	4.470
15	8 16 25.55	2.1345	23 11 37.5	4.579
16	8 18 33.56	2.1325	23 6 59.5	4.688
17	8 20 41.45	2.1305	23 2 15.0	4.796
18	8 22 49.22	2.1285	22 57 24.0	4.904
19	8 24 56.87	2.1264	22 52 26.5	5.012
20	8 27 4.39	2.1243	22 47 22.5	5.120
21	8 29 11.79	2.1222	22 42 12.1	5.227
22	8 31 19.06	2.1200	22 36 55.3	5.333
23	8 33 26.19	2.1179	22 31 32.2	5.438
24	8 35 33.20	2.1157	N.22 26 2.7	5.544

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 35 33.20	2.1157	N.22 26 2.7	5.544
1	8 37 40.07	2.1133	22 20 26.9	5.648
2	8 39 46.80	2.1109	22 14 44.9	5.752
3	8 41 53.41	2.1088	22 8 56.7	5.855
4	8 43 59.86	2.1064	22 3 2.3	5.958
5	8 46 6.18	2.1041	21 57 1.7	6.062
6	8 48 12.36	2.1018	21 50 54.9	6.165
7	8 50 18.40	2.0994	21 44 41.9	6.267
8	8 52 24.29	2.0970	21 38 22.9	6.367
9	8 54 30.04	2.0946	21 31 57.9	6.467
10	8 56 35.64	2.0922	21 25 26.9	6.567
11	8 58 41.11	2.0898	21 18 49.9	6.667
12	9 0 46.41	2.0872	21 12 6.9	6.766
13	9 2 51.53	2.0848	21 5 18.0	6.863
14	9 4 56.59	2.0822	20 58 23.3	6.961
15	9 7 1.45	2.0798	20 51 22.7	7.058
16	9 9 6.17	2.0773	20 44 16.3	7.155
17	9 11 10.73	2.0748	20 37 4.1	7.252
18	9 13 15.14	2.0723	20 29 46.1	7.347
19	9 15 19.40	2.0699	20 22 22.4	7.442
20	9 17 23.52	2.0674	20 14 53.1	7.536
21	9 19 27.47	2.0647	20 7 18.1	7.630
22	9 21 31.28	2.0622	19 59 37.5	7.722
23	9 23 34.93	2.0596	N.19 51 51.4	7.814

SATURDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 25 38.43	2.0571	N.19 43 59.8	7.906
1	9 27 41.79	2.0546	19 36 2.7	7.997
2	9 29 44.98	2.0521	19 28 0.1	8.088
3	9 31 48.04	2.0496	19 19 52.1	8.178
4	9 33 50.93	2.0471	19 11 38.7	8.267
5	9 35 53.69	2.0446	19 3 20.0	8.356
6	9 37 56.28	2.0420	18 54 56.0	8.444
7	9 39 58.73	2.0396	18 46 26.7	8.532
8	9 42 1.03	2.0371	18 37 52.2	8.618
9	9 44 3.18	2.0345	18 29 12.6	8.704
10	9 46 5.18	2.0321	18 20 27.8	8.790
11	9 48 7.04	2.0295	18 11 37.8	8.876
12	9 50 8.74	2.0272	18 2 42.7	8.960
13	9 52 10.31	2.0248	17 53 42.6	9.043
14	9 54 11.72	2.0224	17 44 37.6	9.125
15	9 56 13.00	2.0202	17 35 27.6	9.207
16	9 58 14.14	2.0178	17 26 12.7	9.289
17	10 0 15.13	2.0155	17 16 52.9	9.370
18	10 2 15.99	2.0131	17 7 28.3	9.450
19	10 4 16.71	2.0106	16 57 58.9	9.529
20	10 6 17.28	2.0084	16 48 24.8	9.608
21	10 8 17.72	2.0062	16 38 45.9	9.687
22	10 10 18.03	2.0040	16 29 2.3	9.765
23	10 12 18.20	2.0018	16 19 14.1	9.841
24	10 14 18.25	1.9997	N.16 9 21.4	9.917

SUNDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 14 18.25	1.9997	N.16 9 21.4	9.917
1	10 16 18.17	1.9975	15 59 24.1	9.993
2	10 18 17.95	1.9954	15 49 22.3	10.068
3	10 20 17.61	1.9934	15 39 16.0	10.143
4	10 22 17.15	1.9913	15 29 5.2	10.217
5	10 24 16.56	1.9893	15 18 50.0	10.289
6	10 26 15.87	1.9873	15 8 30.5	10.361
7	10 28 15.04	1.9852	14 58 6.7	10.433
8	10 30 14.09	1.9833	14 47 38.6	10.504
9	10 32 13.04	1.9815	14 37 6.2	10.574
10	10 34 11.87	1.9796	14 26 29.7	10.643
11	10 36 10.59	1.9778	14 15 49.1	10.711
12	10 38 9.21	1.9761	14 5 4.4	10.779
13	10 40 7.72	1.9743	13 54 15.6	10.847
14	10 42 6.12	1.9726	13 43 22.8	10.913
15	10 44 4.43	1.9710	13 32 26.0	10.980
16	10 46 2.64	1.9694	13 21 25.2	11.046
17	10 48 0.75	1.9678	13 10 20.5	11.111
18	10 49 58.77	1.9663	12 59 11.9	11.175
19	10 51 56.70	1.9648	12 47 59.5	11.238
20	10 53 54.54	1.9634	12 36 43.3	11.301
21	10 55 52.31	1.9620	12 25 23.4	11.362
22	10 57 49.98	1.9606	12 13 59.8	11.423
23	10 59 47.58	1.9592	N.12 2 32.6	11.484

MONDAY, JANUARY 1, 1872.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 1 45.09	1.9578	N.11 51 1.7	11.545

PHASES OF THE MOON.

	d	h	m
☾ Last Quarter, . .	4	18	45.7
● New Moon, . .	11	16	1.9
☽ First Quarter, . .	18	8	41.5
○ Full Moon, . . .	26	9	35.0

	d	h
☾ Perigee, ...	12	2.8
☾ Apogee, ...	26	9.4

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	α Arietis	W.	80° 27′ 57″	3190	81° 54′ 18″	3185	83° 20′ 45″	3181	84° 47′ 17″	3176
	Aldebaran	W.	49 23 58	3080	50 52 32	3076	52 21 11	3072	53 49 55	3067
	Spica	E.	85 26 47	3090	83 58 25	3087	82 29 59	3082	81 1 28	3079
	Venus	E.	85 23 21	3435	84 1 44	3431	82 40 3	3428	81 18 18	3423
	Sun	E.	132 6 21	3449	130 45 0	3446	129 23 35	3441	128 2 5	3437
2	Aldebaran	W.	61 15 12	3039	62 44 37	3031	64 14 11	3024	65 43 54	3017
	Pollux	W.	17 19 7	3137	18 46 32	3116	20 14 22	3096	21 42 36	3079
	Spica	E.	73 37 38	3055	72 8 33	3049	70 39 21	3043	69 10 2	3037
	Venus	E.	74 28 13	3397	73 5 53	3391	71 43 26	3384	70 20 51	3376
	Sun	E.	121 13 11	3408	119 51 3	3400	118 28 47	3393	117 6 23	3386
3	Aldebaran	W.	73 14 57	2973	74 45 43	2964	76 16 41	2954	77 47 52	2943
	Pollux	W.	29 8 45	3005	30 38 52	2991	32 9 16	2978	33 39 56	2965
	Jupiter	W.	21 35 19	2981	23 5 56	2967	24 36 50	2953	26 8 2	2939
	Spica	E.	61 41 16	2999	60 11 2	2990	58 40 37	2982	57 10 2	2973
	Venus	E.	63 25 37	3332	62 2 2	3322	60 38 16	3312	59 14 18	3301
	Sun	E.	110 11 57	3340	108 48 32	3329	107 24 54	3318	106 1 3	3306
4	Aldebaran	W.	85 27 19	2883	86 59 59	2871	88 32 55	2858	90 6 8	2844
	Pollux	W.	41 17 31	2896	42 49 55	2882	44 22 37	2867	45 55 38	2853
	Jupiter	W.	33 48 24	2869	35 21 22	2855	36 54 38	2841	38 28 13	2826
	Spica	E.	49 34 7	2924	48 2 18	2913	46 30 16	2903	44 58 1	2892
	Venus	E.	52 11 7	3239	50 45 44	3225	49 20 5	3212	47 54 10	3197
	Sun	E.	98 58 19	3242	97 33 0	3229	96 7 25	3214	94 41 33	3199
5	Pollux	W.	53 45 34	2774	55 20 36	2758	56 55 59	2741	58 31 44	2724
	Jupiter	W.	46 21 3	2748	47 56 39	2732	49 32 37	2715	51 8 57	2698
	Spica	E.	37 13 24	2842	35 39 50	2832	34 6 4	2824	32 32 7	2816
	Venus	E.	40 40 5	3119	39 12 19	3102	37 44 12	3086	36 15 45	3069
	Sun	E.	87 27 32	3119	85 59 45	3101	84 31 37	3084	83 3 8	3065
6	Pollux	W.	66 36 17	2635	68 14 24	2617	69 52 56	2599	71 31 53	2580
	Jupiter	W.	59 16 27	2609	60 55 10	2591	62 34 18	2572	64 13 51	2553
	Regulus	W.	30 44 1	2669	32 21 22	2647	33 59 13	2626	35 37 33	2604
	Venus	E.	28 48 5	2979	27 17 26	2961	25 46 24	2942	24 14 58	2924
	Sun	E.	75 34 59	2972	74 4 11	2953	72 32 59	2932	71 1 21	2912
7	Pollux	W.	79 53 10	2485	81 34 45	2465	83 16 47	2446	84 59 16	2426
	Jupiter	W.	72 38 9	2458	74 20 21	2438	76 3 1	2419	77 46 8	2401
	Regulus	W.	43 56 31	2499	45 37 46	2479	47 19 29	2458	49 1 41	2438
	Sun	E.	63 16 41	2810	61 42 26	2789	60 7 44	2769	58 32 35	2748
8	Pollux	W.	93 38 34	2332	95 23 47	2313	97 9 27	2295	98 55 34	2277
	Jupiter	W.	86 28 36	2305	88 14 28	2287	90 0 47	2268	91 47 34	2250
	Regulus	W.	57 39 52	2339	59 24 55	2319	61 10 27	2300	62 56 26	2281
	Sun	E.	50 29 59	2645	48 52 5	2626	47 13 45	2606	45 34 58	2586
9	Jupiter	W.	100 48 4	2164	102 37 26	2147	104 27 13	2132	106 17 23	2116
	Regulus	W.	71 53 5	2194	73 41 42	2177	75 30 44	2161	77 20 10	2146
	Spica	W.	18 43 18	2454	20 25 36	2394	22 9 19	2344	23 54 14	2304
	Sun	E.	37 14 26	2494	35 33 4	2476	33 51 17	2459	32 9 6	2443
13	Sun	W.	18 57 31	2287	20 43 50	2294	22 29 59	2301	24 15 57	2309
	Fomalhaut	E.	54 17 49	2264	52 30 56	2284	50 44 33	2307	48 58 44	2333

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Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	α Arietis	W.	86° 13′ 55″	3171	87° 40′ 39″	3166	89° 7′ 29″	3161	90° 34′ 25″	3157
	Aldebaran	W.	55 18 45	3062	56 47 41	3056	58 16 44	3051	59 45 54	3044
	Spica	E.	79 32 53	3075	78 4 13	3070	76 35 27	3066	75 6 36	3060
	Venus	E.	79 56 28	3419	78 34 33	3414	77 12 32	3409	75 50 26	3403
	Sun	E.	126 40 30	3432	125 18 50	3427	123 57 4	3421	122 35 11	3415
2	Aldebaran	W.	67 13 46	3009	68 43 48	3001	70 14 0	2992	71 44 23	2983
	Pollux	W.	23 11 11	3062	24 40 7	3047	26 9 22	3032	27 38 55	3018
	Spica	E.	67 40 35	3030	66 10 59	3022	64 41 14	3015	63 11 20	3007
	Venus	E.	68 58 7	3368	67 35 14	3360	66 12 12	3351	64 49 0	3342
	Sun	E.	115 43 50	3377	114 21 7	3368	112 58 14	3359	111 35 11	3350
3	Aldebaran	W.	79 19 16	2932	80 50 54	2920	82 22 47	2909	83 54 55	2896
	Pollux	W.	35 10 53	2952	36 42 6	2938	38 13 37	2924	39 45 25	2910
	Jupiter	W.	27 39 32	2925	29 11 19	2912	30 43 23	2898	32 15 45	2884
	Spica	E.	55 39 15	2963	54 8 16	2954	52 37 5	2944	51 5 42	2935
	Venus	E.	57 50 8	3269	56 25 44	3277	55 1 6	3265	53 36 14	3253
	Sun	E.	104 36 59	3294	103 12 41	3281	101 48 9	3270	100 23 22	3256
4	Aldebaran	W.	91 39 39	2830	93 13 28	2815	94 47 36	2801	96 22 3	2785
	Pollux	W.	47 28 57	2838	49 2 36	2822	50 36 35	2807	52 10 54	2791
	Jupiter	W.	40 2 7	2811	41 36 20	2795	43 10 54	2780	44 45 48	2764
	Spica	E.	43 25 32	2882	41 52 50	2872	40 19 55	2861	38 46 46	2851
	Venus	E.	46 27 57	3182	45 1 26	3168	43 34 38	3152	42 7 31	3136
	Sun	E.	93 15 23	3183	91 48 54	3168	90 22 6	3152	88 54 59	3135
5	Pollux	W.	60 7 52	2707	61 44 23	2689	63 21 17	2672	64 58 35	2654
	Jupiter	W.	52 45 40	2681	54 22 46	2663	56 0 15	2645	57 38 9	2627
	Spica	E.	30 58 1	2810	29 23 46	2805	27 49 25	2802	26 15 0	2803
	Venus	E.	34 46 57	3052	33 17 48	3032	31 48 16	3015	30 18 22	2997
	Sun	E.	81 34 16	3047	80 5 2	3029	78 35 25	3009	77 5 24	2990
6	Pollux	W.	73 11 16	2561	74 51 5	2542	76 31 20	2522	78 12 2	2504
	Jupiter	W.	65 53 50	2535	67 34 15	2516	69 15 6	2497	70 56 24	2477
	Regulus	W.	37 16 22	2583	38 55 40	2561	40 35 28	2540	42 15 45	2520
	Venus	E.	22 43 9	2905	21 10 57	2887	19 38 22	2869	18 5 24	2852
	Sun	E.	69 29 17	2892	67 56 48	2871	66 23 52	2851	64 50 30	2830
7	Pollux	W.	86 42 13	2408	88 25 37	2388	90 9 29	2369	91 53 48	2350
	Jupiter	W.	79 29 42	2381	81 13 44	2362	82 58 14	2343	84 43 11	2324
	Regulus	W.	50 44 22	2417	52 27 32	2398	54 11 10	2378	55 55 17	2358
	Sun	E.	56 56 59	2727	55 20 55	2707	53 44 24	2686	52 7 25	2666
8	Pollux	W.	100 42 7	2260	102 29 6	2242	104 16 31	2225	106 4 22	2207
	Jupiter	W.	93 34 47	2232	95 22 27	2214	97 10 33	2196	98 59 6	2180
	Regulus	W.	64 42 53	2263	66 29 47	2245	68 17 7	2228	70 4 53	2210
	Sun	E.	43 55 44	2567	42 16 4	2548	40 35 57	2529	38 55 24	2511
9	Jupiter	W.	108 7 57	2102	109 58 53	2088	111 50 11	2075	113 41 49	2061
	Regulus	W.	79 9 59	2131	81 0 11	2116	82 50 45	2103	84 41 40	2090
	Spica	W.	25 40 8	2267	27 26 56	2235	29 14 31	2208	31 2 47	2184
	Sun	E.	30 26 32	2427	28 43 36	2412	27 0 18	2396	25 16 38	2384
13	Sun	W.	26 1 43	2319	27 47 15	2329	29 32 32	2339	31 17 34	2351
	Fomalhaut	E.	47 13 33	2363	45 29 5	2396	43 45 24	2431	42 2 34	2472

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13	α Pegasi	E.	73° 22′ 31″	2450	71° 40′ 7″	2466	69° 58′ 6″	2485	68° 16′ 32″	2507
14	Sun	W.	33 2 19	2364	34 46 46	2376	36 30 55	2389	38 14 45	2403
	Fomalhaut	E.	40 20 42	2518	38 39 54	2568	37 0 15	2626	35 21 55	2691
	α Pegasi	E.	59 57 3	2646	58 19 11	2683	56 42 8	2721	55 5 56	2763
	α Arietis	E.	101 10 21	2188	99 21 36	2200	97 33 8	2210	95 44 56	2222
15	Sun	W.	46 48 44	2481	48 30 24	2497	50 11 41	2514	51 52 35	2531
	α Pegasi	E.	47 20 34	3040	45 51 11	3112	44 23 16	3190	42 56 55	3277
	α Arietis	E.	86 48 47	2294	85 2 39	2311	83 16 55	2328	81 31 34	2345
16	Sun	W.	60 10 55	2623	61 49 19	2641	63 27 18	2660	65 4 51	2679
	Mars	W.	24 25 32	2559	26 5 23	2577	27 44 50	2594	29 23 53	2612
	α Pegasi	E.	36 13 43	3873	34 59 56	4039	33 48 55	4227	32 40 54	4440
	α Arietis	E.	72 51 26	2439	71 8 47	2460	69 26 37	2481	67 44 57	2502
	Aldebaran	E.	103 12 46	2311	101 27 3	2329	99 41 46	2346	97 56 54	2364
17	Sun	W.	73 6 15	2775	74 41 16	2794	76 15 52	2812	77 50 4	2831
	α Aquilæ	W.	50 20 41	3854	51 34 48	3805	52 49 45	3763	54 5 26	3726
	Mars	W.	37 33 7	2702	39 9 44	2720	40 45 57	2739	42 21 45	2756
	α Arietis	E.	59 24 12	2615	57 45 38	2640	56 7 37	2665	54 30 10	2689
	Aldebaran	E.	89 18 53	2452	87 36 32	2470	85 54 36	2487	84 13 4	2504
18	Sun	W.	85 35 2	2924	87 6 51	2942	88 38 17	2958	90 9 22	2975
	α Aquilæ	W.	60 32 10	3601	61 50 43	3587	63 9 32	3574	64 28 35	3564
	Mars	W.	50 14 54	2845	51 48 23	2862	53 21 30	2880	54 54 14	2898
	α Arietis	E.	46 31 43	2831	44 57 55	2862	43 24 47	2895	41 52 22	2930
	Aldebaran	E.	75 51 28	2590	74 12 19	2607	72 33 33	2623	70 55 9	2639
19	Sun	W.	97 39 30	3058	99 8 30	3074	100 37 11	3089	102 5 34	3104
	α Aquilæ	W.	71 5 56	3539	72 25 37	3539	73 45 18	3540	75 4 58	3541
	Mars	W.	62 32 39	2977	64 3 20	2993	65 33 42	3007	67 3 46	3022
	Fomalhaut	W.	35 36 36	3241	37 1 57	3217	38 27 46	3197	39 53 59	3180
	Aldebaran	E.	62 48 33	2716	61 12 15	2732	59 36 17	2747	58 0 39	2761
	Jupiter	E.	113 15 37	2675	111 38 23	2689	110 1 28	2703	108 24 52	2716
20	Sun	W.	109 23 4	3174	110 49 44	3187	112 16 9	3200	113 42 18	3212
	Mars	W.	74 29 39	3091	75 58 0	3104	77 26 5	3116	78 53 55	3128
	Fomalhaut	W.	47 8 54	3137	48 36 19	3133	50 3 49	3130	51 31 22	3129
	α Pegasi	W.	35 11 2	4369	36 16 51	4266	37 24 15	4177	38 33 3	4098
	Aldebaran	E.	50 7 3	2828	48 33 12	2842	46 59 38	2854	45 26 20	2867
	Jupiter	E.	100 26 8	2779	98 51 12	2790	97 16 31	2801	95 42 5	2812
21	Sun	W.	120 49 36	3269	122 14 24	3278	123 39 1	3288	125 3 26	3296
	Mars	W.	86 9 38	3183	87 36 7	3193	89 2 25	3203	90 28 31	3212
	Fomalhaut	W.	58 49 14	3133	60 16 44	3134	61 44 12	3137	63 11 37	3140
	α Pegasi	W.	44 33 35	3820	45 48 16	3783	47 3 36	3749	48 19 31	3718
	Aldebaran	E.	37 43 49	2927	36 12 4	2939	34 40 34	2950	33 9 19	2962
	Pollux	E.	81 51 59	2905	80 19 47	2915	78 47 47	2924	77 15 59	2933
	Jupiter	E.	87 53 22	2863	86 20 16	2872	84 47 21	2881	83 14 38	2890
22	Mars	W.	97 36 23	3254	99 1 28	3261	100 26 25	3269	101 51 14	3276
	Fomalhaut	W.	70 27 47	3156	71 54 49	3159	73 21 47	3163	74 48 40	3167
	α Pegasi	W.	54 46 10	3608	56 4 36	3592	57 23 19	3577	58 42 18	3565
	Pollux	E.	69 39 38	2973	68 8 51	2981	66 38 14	2987	65 7 45	2993

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13	α Pegasi	E.	66° 35′ 28″	2530	64° 54′ 56″	2555	63° 14′ 59″	2583	61° 35′ 40″	2613
14	Sun	W.	39 58 16	2417	41 41 26	2432	43 24 15	2448	45 6 41	2465
	Fomalhaut	E.	33 45 3	2765	32 9 49	2849	30 36 25	2947	29 5 6	3062
	α Pegasi	E.	53 30 40	2811	51 56 26	2861	50 23 17	2916	48 51 18	2975
	α Arietis	E.	93 57 1	2235	92 9 26	2249	90 22 12	2264	88 35 19	2278
15	Sun	W.	53 33 5	2549	55 13 10	2567	56 52 50	2585	58 32 5	2604
	α Pegasi	E.	41 32 17	3372	40 9 29	3479	38 48 41	3596	37 30 2	3797
	α Arietis	E.	79 46 40	2362	78 2 11	2381	76 18 9	2400	74 34 34	2419
16	Sun	W.	66 41 59	2698	68 18 41	2717	69 54 58	2737	71 30 49	2756
	Mars	W.	31 2 32	2629	32 40 47	2647	34 18 38	2665	35 56 5	2684
	α Pegasi	E.	31 36 9	4685	30 34 57	4967	29 37 36	5294	28 44 24	5674
	α Arietis	E.	66 3 46	2524	64 23 6	2545	62 42 56	2569	61 3 18	2592
	Aldebaran	E.	96 12 27	2381	94 28 26	2399	92 44 50	2417	91 1 39	2434
17	Sun	W.	79 23 51	2850	80 57 14	2869	82 30 13	2887	84 2 49	2905
	α Aquilæ	W.	55 21 46	3693	56 38 40	3664	57 56 5	3640	59 13 56	3619
	Mars	W.	43 57 10	2775	45 32 11	2792	47 6 49	2811	48 41 3	2828
	α Arietis	E.	52 53 16	2716	51 16 58	2744	49 41 16	2772	48 6 11	2800
	Aldebaran	E.	82 31 57	2522	80 51 14	2539	79 10 55	2556	77 31 0	2573
18	Sun	W.	91 40 6	2993	93 10 28	3009	94 40 29	3026	96 10 9	3043
	α Aquilæ	W.	65 47 49	3555	67 7 12	3549	68 26 42	3545	69 46 17	3541
	Mars	W.	56 26 36	2914	57 58 37	2930	59 30 18	2946	61 1 38	2962
	α Arietis	E.	40 20 41	2967	38 49 47	3006	37 19 42	3048	35 50 29	3093
	Aldebaran	E.	69 17 7	2655	67 39 27	2672	66 2 9	2687	64 25 11	2701
19	Sun	W.	103 33 39	3119	105 1 26	3133	106 28 55	3147	107 56 8	3161
	α Aquilæ	W.	76 24 37	3544	77 44 13	3548	79 3 44	3553	80 23 10	3557
	Mars	W.	68 33 31	3036	70 2 59	3051	71 32 9	3065	73 1 2	3078
	Fomalhaut	W.	41 20 32	3167	42 47 21	3157	44 14 22	3148	45 41 34	3141
	Aldebaran	E.	56 25 20	2775	54 50 19	2788	53 15 36	2802	51 41 11	2815
	Jupiter	E.	106 48 33	2729	105 12 31	2741	103 36 46	2755	102 1 19	2767
20	Sun	W.	115 8 13	3224	116 33 54	3236	117 59 21	3247	119 24 35	3258
	Mars	W.	80 21 31	3139	81 48 53	3151	83 16 1	3162	84 42 56	3173
	Fomalhaut	W.	52 58 57	3129	54 26 32	3129	55 54 7	3129	57 21 41	3130
	α Pegasi	W.	39 43 7	4028	40 54 19	3966	42 6 32	3913	43 19 39	3864
	Aldebaran	E.	43 53 19	2880	42 20 34	2891	40 48 4	2903	39 15 49	2915
	Jupiter	E.	94 7 53	2823	92 33 55	2835	91 0 11	2844	89 26 40	2854
21	Sun	W.	126 27 40	3306	127 51 44	3316	129 15 37	3325	130 39 20	3332
	Mars	W.	91 54 26	3221	93 20 10	3230	94 45 44	3238	96 11 8	3246
	Fomalhaut	W.	64 38 58	3143	66 6 16	3145	67 33 31	3149	69 0 41	3153
	α Pegasi	W.	49 35 59	3692	50 52 55	3667	52 10 17	3645	53 28 3	3625
	Aldebaran	E.	31 38 19	2974	30 7 34	2987	28 37 5	3000	27 6 52	3013
	Pollux	E.	75 44 22	2942	74 12 56	2950	72 41 40	2958	71 10 34	2965
	Jupiter	E.	81 42 6	2898	80 9 44	2905	78 37 32	2913	77 5 30	2921
22	Mars	W.	103 15 54	3282	104 40 26	3288	106 4 51	3294	107 29 9	3300
	Fomalhaut	W.	76 15 29	3170	77 42 14	3174	79 8 54	3178	80 35 29	3182
	α Pegasi	W.	60 1 31	3554	61 20 56	3544	62 40 32	3534	64 0 19	3525
	Pollux	E.	63 37 24	3000	62 7 11	3006	60 37 6	3012	59 7 8	3018

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22	Jupiter	E.	75° 33′ 38″	2927	74° 1′ 54″	2935	72° 30′ 19″	2941	70° 58′ 52″	2947
23	Fomalhaut	W.	82 2 0	3185	83 28 27	3189	84 54 49	3193	86 21 7	3196
	α Pegasi	W.	65 20 15	3518	66 40 19	3512	68 0 30	3506	69 20 48	3500
	Pollux	E.	57 37 17	3023	56 7 33	3029	54 37 56	3034	53 8 25	3039
	Jupiter	E.	63 23 32	2976	61 52 49	2980	60 22 11	2984	58 51 38	2989
	Regulus	E.	93 36 54	3021	92 7 7	3026	90 37 26	3030	89 7 50	3034
24	α Pegasi	W.	76 3 34	3482	77 24 18	3480	78 45 5	3479	80 5 53	3478
	α Arietis	W.	32 25 43	3496	33 46 12	3464	35 7 16	3438	36 28 50	3413
	Pollux	E.	45 42 20	3061	44 13 23	3066	42 44 32	3070	41 15 46	3074
	Jupiter	E.	51 20 13	3008	49 50 10	3011	48 20 11	3014	46 50 16	3017
	Regulus	E.	81 41 8	3053	80 12 1	3056	78 42 57	3059	77 13 57	3062
25	α Pegasi	W.	86 50 6	3477	88 10 56	3477	89 31 46	3478	90 52 35	3480
	α Arietis	W.	43 22 35	3328	44 46 14	3316	46 10 7	3305	47 34 13	3294
	Pollux	E.	33 53 10	3096	32 24 55	3100	30 56 45	3105	29 28 41	3110
	Jupiter	E.	39 21 31	3030	37 51 56	3032	36 22 23	3034	34 52 52	3037
	Regulus	E.	69 49 46	3073	68 21 4	3075	66 52 24	3077	65 23 46	3078
26	α Pegasi	W.	97 36 3	3494	98 56 34	3497	100 17 2	3500	101 37 26	3506
	α Arietis	W.	54 37 20	3256	56 2 23	3250	57 27 33	3244	58 52 50	3238
	Aldebaran	W.	22 51 49	3141	24 19 9	3133	25 46 39	3126	27 14 17	3121
	Regulus	E.	58 1 4	3085	56 32 36	3086	55 4 9	3087	53 35 43	3087
	Spica	E.	112 1 59	3100	110 33 49	3100	109 5 39	3100	107 37 29	3100
27	α Arietis	W.	66 0 46	3215	67 26 37	3211	68 52 33	3207	70 18 34	3204
	Aldebaran	W.	34 33 53	3101	36 2 2	3097	37 30 15	3094	38 58 32	3091
	Regulus	E.	46 13 44	3090	44 45 22	3091	43 17 1	3091	41 48 40	3091
	Spica	E.	100 16 27	3095	98 48 11	3094	97 19 54	3092	95 51 35	3091
28	α Arietis	W.	77 29 46	3184	78 56 14	3182	80 22 45	3178	81 49 21	3173
	Aldebaran	W.	46 20 55	3075	47 49 35	3071	49 18 20	3069	50 47 8	3065
	Regulus	E.	34 27 5	3095	32 58 49	3096	31 30 34	3097	30 2 21	3100
	Spica	E.	88 29 32	3082	87 1 0	3080	85 32 26	3078	84 3 49	3075
	Venus	E.	116 56 17	3482	115 35 33	3481	114 14 48	3480	112 54 1	3475
29	α Arietis	W.	89 3 27	3156	90 30 29	3152	91 57 36	3148	93 24 47	3144
	Aldebaran	W.	58 12 15	3046	59 41 31	3042	61 10 52	3037	62 40 19	3032
	Pollux	W.	14 21 59	3193	15 48 16	3165	17 15 7	3140	18 42 28	3119
	Spica	E.	76 39 56	3060	75 10 58	3057	73 41 56	3053	72 12 49	3049
	Venus	E.	106 9 7	3458	104 47 56	3454	103 26 41	3451	102 5 22	3446
30	Aldebaran	W.	70 9 5	3005	71 39 11	3000	73 9 24	2994	74 39 44	2987
	Pollux	W.	26 4 40	3047	27 33 55	3035	29 3 24	3026	30 33 5	3015
	Jupiter	W.	20 55 4	2984	22 25 37	2973	23 56 23	2964	25 27 21	2955
	Spica	E.	64 46 3	3098	63 16 25	3094	61 46 42	3019	60 16 53	3014
	Venus	E.	95 17 21	3419	93 55 26	3413	92 33 24	3407	91 11 15	3400
31	Pollux	W.	38 4 36	2966	39 35 31	2957	41 6 38	2947	42 37 57	2937
	Jupiter	W.	33 4 59	2910	34 37 5	2901	36 9 22	2892	37 41 51	2883
	Spica	E.	52 46 6	2985	51 15 35	2979	49 44 56	2973	48 14 10	2967
	Venus	E.	84 18 26	3361	82 55 25	3352	81 32 14	3344	80 8 53	3334
	Sun	E.	129 33 52	3319	128 10 2	3310	126 46 2	3300	125 21 51	3291

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
22	Jupiter	E.	69° 27′ 33″	2954	67° 56′ 22″	2959	66° 25′ 18″	2965	64° 54′ 22″	2970
23	Fomalhaut	W.	87 47 21	3200	89 13 30	3204	90 39 34	3208	92 5 34	3211
	α Pegasi	W.	70 41 12	3495	72 1 42	3491	73 22 16	3488	74 42 53	3485
	Pollux	E.	51 39 1	3044	50 9 43	3048	48 40 30	3052	47 11 22	3057
	Jupiter	E.	57 21 11	2993	55 50 50	2997	54 20 33	3001	52 50 21	3004
	Regulus	E.	87 38 20	3039	86 8 55	3043	84 39 35	3046	83 10 19	3050
24	α Pegasi	W.	81 26 42	3477	82 47 32	3476	84 8 23	3475	85 29 15	3476
	α Arietis	W.	37 50 52	3392	39 13 18	3373	40 36 5	3356	41 59 12	3342
	Pollux	E.	39 47 5	3078	38 18 28	3082	36 49 56	3087	35 21 30	3091
	Jupiter	E.	45 20 24	3020	43 50 36	3022	42 20 51	3026	40 51 10	3027
	Regulus	E.	75 45 1	3065	74 16 8	3067	72 47 18	3069	71 18 31	3071
25	α Pegasi	W.	92 13 21	3482	93 34 5	3484	94 54 47	3486	96 15 27	3489
	α Arietis	W.	48 58 31	3286	50 22 59	3277	51 47 37	3270	53 12 24	3262
	Pollux	E.	28 0 44	3116	26 32 54	3123	25 5 12	3130	23 37 39	3138
	Jupiter	E.	33 23 25	3039	31 54 1	3041	30 24 39	3043	28 55 20	3045
	Regulus	E.	63 55 10	3080	62 26 36	3082	60 58 4	3082	59 29 33	3084
26	α Pegasi	W.	102 57 44	3511	104 17 56	3516	105 38 2	3522	106 58 2	3527
	α Arietis	W.	60 18 14	3234	61 43 43	3229	63 9 18	3224	64 34 59	3219
	Aldebaran	W.	28 42 1	3116	30 9 51	3111	31 37 47	3107	33 5 48	3104
	Regulus	E.	52 7 18	3087	50 38 53	3088	49 10 29	3089	47 42 6	3090
	Spica	E.	106 9 19	3099	104 41 8	3098	103 12 56	3096	101 44 42	3096
27	α Arietis	W.	71 44 39	3199	73 10 49	3195	74 37 4	3192	76 3 23	3188
	Aldebaran	W.	40 26 53	3087	41 55 18	3084	43 23 47	3082	44 52 19	3078
	Regulus	E.	40 20 20	3092	38 52 1	3092	37 23 42	3092	35 55 23	3093
	Spica	E.	94 23 14	3089	92 54 51	3088	91 26 27	3087	89 58 1	3084
28	α Arietis	W.	83 16 2	3171	84 42 46	3167	86 9 35	3163	87 36 29	3159
	Aldebaran	W.	52 16 0	3061	53 44 57	3058	55 13 58	3054	56 43 4	3050
	Regulus	E.	28 34 11	3102	27 6 4	3105	25 38 0	3109	24 10 1	3114
	Spica	E.	82 35 9	3073	81 6 26	3070	79 37 40	3067	78 8 50	3064
	Venus	E.	111 33 9	3472	110 12 14	3469	108 51 15	3466	107 30 13	3463
29	α Arietis	W.	94 52 3	3140	96 19 24	3136	97 46 50	3132	99 14 21	3129
	Aldebaran	W.	64 9 52	3028	65 39 30	3023	67 9 14	3017	68 39 6	3011
	Pollux	W.	20 10 15	3101	21 38 24	3084	23 6 53	3070	24 35 39	3058
	Spica	E.	70 43 37	3046	69 14 21	3043	67 45 1	3038	66 15 35	3033
	Venus	E.	100 43 57	3441	99 22 27	3436	98 0 51	3431	96 39 9	3425
30	Aldebaran	W.	76 10 13	2981	77 40 50	2973	79 11 36	2966	80 42 31	2959
	Pollux	W.	32 2 59	3005	33 33 5	2996	35 3 23	2986	36 33 53	2976
	Jupiter	W.	26 58 30	2946	28 29 50	2937	30 1 22	2928	31 33 5	2920
	Spica	E.	58 46 57	3009	57 16 55	3003	55 46 46	2997	54 16 30	2991
	Venus	E.	89 48 58	3393	88 26 33	3385	87 3 59	3378	85 41 17	3370
31	Pollux	W.	44 9 29	2927	45 41 14	2916	47 13 12	2905	48 45 24	2835
	Jupiter	W.	39 14 32	2873	40 47 26	2863	42 20 32	2852	43 53 52	2842
	Spica	E.	46 43 16	2961	45 12 14	2954	43 41 4	2949	42 9 47	2943
	Venus	E.	78 45 21	3324	77 21 37	3314	75 57 42	3305	74 33 36	3295
	Sun	E.	123 57 29	3282	122 32 56	3271	121 8 11	3261	119 43 14	3250

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	19 12 0.90	13.631	−23 20 30.3	+18.46	0 29.3
2	19 17 27.72	13.603	23 12 45.6	20.26	0 30.8
3	19 22 53.83	13.573	23 4 18.0	22.04	0 32.3
4	19 28 19.18	13.540	22 55 7.9	23.80	0 33.8
5	19 33 43.74	13.506	22 45 15.8	25.54	0 35.3
6	19 39 7.44	13.469	22 34 42.0	27.26	0 36.8
7	19 44 30.23	13.430	22 23 27.1	28.97	0 38.2
8	19 49 52.08	13.390	22 11 31.5	30.66	0 39.6
9	19 55 12.96	13.348	21 58 55.7	32.33	0 41.0
10	20 0 32.82	13.305	21 45 40.2	33.97	0 42.4
11	20 5 51.61	13.261	21 31 45.5	35.59	0 43.7
12	20 11 9.31	13.215	21 17 12.2	37.18	0 45.0
13	20 16 25.91	13.168	21 2 1.0	38.75	0 46.4
14	20 21 41.36	13.120	20 46 12.4	40.30	0 47.7
15	20 26 55.64	13.070	20 29 47.0	41.81	0 49.0
16	20 32 8.73	13.020	20 12 45.5	43.30	0 50.3
17	20 37 20.60	12.969	19 55 8.6	44.76	0 51.5
18	20 42 31.24	12.917	19 36 56.9	46.20	0 52.8
19	20 47 40.62	12.865	19 18 11.1	47.61	0 54.0
20	20 52 48.74	12.812	18 58 51.9	48.99	0 55.2
21	20 57 55.59	12.759	18 39 0.0	50.34	0 56.3
22	21 3 1.15	12.705	18 18 36.1	51.65	0 57.5
23	21 8 5.42	12.651	17 57 41.1	52.93	0 58.6
24	21 13 8.39	12.597	17 36 15.6	54.18	0 59.7
25	21 18 10.06	12.543	17 14 20.5	55.40	1 0.8
26	21 23 10.43	12.489	16 51 56.4	56.59	1 1.8
27	21 28 9.51	12.435	16 29 4.2	57.75	1 2.9
28	21 33 7.30	12.381	16 5 44.7	58.87	1 3.9
29	21 38 3.81	12.328	15 41 58.6	59.96	1 4.9
30	21 42 59.05	12.276	15 17 46.7	61.02	1 5.9
31	21 47 53.05	12.224	14 53 9.7	62.05	1 6.9
32	21 52 45.81	12.173	−14 28 8.4	+63.05	1 7.8

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	21 52 45.81	12.173	−14 28 8.4	+63.05	1 7.8
2	21 57 37.35	12.123	14 2 43.7	64.01	1 8.7
3	22 2 27.69	12.074	13 36 56.3	64.93	1 9.6
4	22 7 16.87	12.025	13 10 47.1	65.83	1 10.5
5	22 12 4.90	11.978	12 44 16.8	66.69	1 11.3
6	22 16 51.82	11.932	12 17 26.2	67.52	1 12.2
7	22 21 37.65	11.887	11 50 16.0	68.32	1 13.0
8	22 26 22.41	11.844	11 22 47.0	69.09	1 13.8
9	22 31 6.14	11.801	10 55 0.0	69.82	1 14.6
10	22 35 48.88	11.760	10 26 55.8	70.52	1 15.4
11	22 40 30.65	11.721	9 58 35.1	71.19	1 16.1
12	22 45 11.48	11.683	9 29 58.7	71.83	1 16.9
13	22 49 51.42	11.646	9 1 7.4	72.44	1 17.6
14	22 54 30.51	11.611	8 32 1.9	73.01	1 18.3
15	22 59 8.77	11.577	8 2 43.0	73.55	1 19.0
16	23 3 46.24	11.545	7 33 11.5	74.06	1 19.7
17	23 8 22.95	11.514	7 3 28.1	74.54	1 20.3
18	23 12 58.93	11.485	6 33 33.7	74.99	1 21.0
19	23 17 34.23	11.457	6 3 29.0	75.40	1 21.7
20	23 22 8.90	11.431	5 33 14.7	75.78	1 22.3
21	23 26 42.96	11.407	5 2 51.7	76.13	1 22.9
22	23 31 16.45	11.384	4 32 20.6	76.45	1 23.5
23	23 35 49.41	11.363	4 1 42.2	76.74	1 24.1
24	23 40 21.87	11.343	3 30 57.4	76.99	1 24.7
25	23 44 53.88	11.325	3 0 6.9	77.21	1 25.3
26	23 49 25.49	11.309	2 29 11.4	77.40	1 25.9
27	23 53 56.72	11.294	1 58 11.8	77.56	1 26.5
28	23 58 27.62	11.281	1 27 8.7	77.69	1 27.1
29	0 2 58.23	11.270	0 56 2.9	77.79	1 27.6
30	0 7 28.60	11.261	− 0 24 55.2	77.86	1 28.2
31	0 11 58.77	11.254	+ 0 6 13.7	77.89	1 28.7
32	0 16 28.77	11.248	+ 0 37 23.2	+77.90	1 29.3

Day of the Month,	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter	6″.0	6″.0	5″.1	5″.1	5″.1	5″.1	5″.2
Hor. Parallax	5.2	5.2	5.2	5.3	5.3	5.3	5.4

Day of the Month,	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter	5″.2	5″.2	5″.3	5″.3	5″.4	5″.4
Hor. Parallax	5.4	5.4	5.5	5.5	5.6	5.6

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	0 2 58.23	11.270	−0 56 2.9	+77.79	1 27.6
2	0 7 28.60	11.261	−0 24 55.2	77.86	1 28.2
3	0 11 58.77	11.254	+0 6 13.7	77.89	1 28.7
4	0 16 28.77	11.248	0 37 23.2	77.90	1 29.3
5	0 20 58.66	11.244	1 8 32.4	77.87	1 29.9
6	0 25 28.48	11.241	1 39 40.6	77.81	1 30.4
7	0 29 58.27	11.241	2 10 47.1	77.73	1 31.0
8	0 34 28.08	11.243	2 41 51.2	77.61	1 31.5
9	0 38 57.95	11.247	3 12 52.1	77.46	1 32.1
10	0 43 27.93	11.252	3 43 49.2	77.28	1 32.7
11	0 47 58.06	11.259	4 14 41.7	77.08	1 33.2
12	0 52 28.38	11.268	4 45 28.8	76.84	1 33.8
13	0 56 58.94	11.279	5 16 9.9	76.58	1 34.3
14	1 1 29.78	11.291	5 46 44.3	76.28	1 34.9
15	1 6 0.93	11.306	6 17 11.2	75.95	1 35.5
16	1 10 32.44	11.321	6 47 29.9	75.59	1 36.1
17	1 15 4.35	11.338	7 17 39.6	75.21	1 36.7
18	1 19 36.69	11.357	7 47 39.7	74.79	1 37.3
19	1 24 9.50	11.377	8 17 29.4	74.34	1 37.9
20	1 28 42.82	11.399	8 47 7.9	73.86	1 38.5
21	1 33 16.68	11.423	9 16 34.5	73.35	1 39.1
22	1 37 51.11	11.447	9 45 48.5	72.81	1 39.7
23	1 42 26.15	11.473	10 14 49.0	72.23	1 40.4
24	1 47 1.84	11.500	10 43 35.3	71.62	1 41.0
25	1 51 38.19	11.529	11 12 6.6	70.98	1 41.7
26	1 56 15.24	11.559	11 40 22.3	70.31	1 42.4
27	2 0 53.01	11.589	12 8 21.5	69.61	1 43.0
28	2 5 31.54	11.621	12 36 3.5	68.88	1 43.7
29	2 10 10.85	11.654	13 3 27.6	68.12	1 44.4
30	2 14 50.96	11.689	13 30 33.0	67.33	1 45.2
31	2 19 31.91	11.724	13 57 18.9	66.50	1 45.9
32	2 24 13.71	11.760	+14 23 44.7	+65.64	1 46.7

Day of the Month,	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter	5″.4	5″.5	5″.6	5″.6	5″.7	5″.8
Hor. Parallax	5.6	5.7	5.8	5.8	5.9	6.0

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	2 24 13.71	11.760	+14 23 44.7	+65.64	1 46.7
2	2 28 56.39	11.797	14 49 49.5	64.75	1 47.5
3	2 33 39.97	11.835	15 15 32.6	63.83	1 48.2
4	2 38 24.47	11.873	15 40 53.3	62.88	1 49.0
5	2 43 9.90	11.913	16 5 50.8	61.91	1 49.9
6	2 47 56.29	11.953	16 30 24.5	60.90	1 50.7
7	2 52 43.64	11.994	16 54 33.7	59.86	1 51.5
8	2 57 31.98	12.035	17 18 17.6	58.79	1 52.4
9	3 2 21.32	12.077	17 41 35.5	57.69	1 53.3
10	3 7 11.67	12.119	18 4 26.7	56.57	1 54.2
11	3 12 3.03	12.161	18 26 50.5	55.41	1 55.1
12	3 16 55.41	12.204	18 48 46.2	54.23	1 56.0
13	3 21 48.81	12.246	19 10 13.2	53.01	1 57.0
14	3 26 43.23	12.289	19 31 10.7	51.77	1 57.9
15	3 31 38.67	12.331	19 51 38.0	50.50	1 58.9
16	3 36 35.12	12.373	20 11 34.5	49.20	1 59.9
17	3 41 32.58	12.415	20 30 59.6	47.88	2 0.9
18	3 46 31.03	12.456	20 49 52.6	46.53	2 1.9
19	3 51 30.44	12.496	21 8 12.8	45.15	2 3.0
20	3 56 30.81	12.535	21 25 59.6	43.75	2 4.1
21	4 1 32.12	12.573	21 43 12.4	42.32	2 5.2
22	4 6 34.33	12.611	21 59 50.5	40.86	2 6.3
23	4 11 37.42	12.647	22 15 53.4	39.38	2 7.4
24	4 16 41.36	12.681	22 31 20.5	37.87	2 8.5
25	4 21 46.12	12.714	22 46 11.1	36.34	2 9.7
26	4 26 51.66	12.746	23 0 24.8	34.80	2 10.8
27	4 31 57.94	12.777	23 14 1.2	33.23	2 12.0
28	4 37 4.92	12.805	23 26 59.7	31.64	2 13.1
29	4 42 12.56	12.831	23 39 19.7	30.03	2 14.2
30	4 47 20.81	12.856	23 51 0.9	28.40	2 15.4
31	4 52 29.63	12.878	24 2 2.8	26.76	2 16.7
32	4 57 38.97	12.899	+24 12 25.1	+25.10	2 17.9

Day of the Month,	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter	5″.9	6″.0	6″.1	6″.2	6″.4	6″.5
Hor. Parallax	6.1	6.2	6.3	6.5	6.6	6.7

VENUS, 1871.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	4 52 29.63	12.878	+24 2 2.8	+26.70	2 16.7	1	7 31 28.75	12.334	+24 3 43.1	−25.95	2 53.4
2	4 57 38.97	12.899	24 12 25.1	25.10	2 17.9	2	7 36 24.08	12.275	23 53 1.7	27.49	2 54.4
3	5 2 48.78	12.918	24 22 7.4	23.42	2 19.2	3	7 41 17.98	12.215	23 41 43.7	29.01	2 55.3
4	5 7 59.01	12.934	24 31 9.4	21.74	2 20.4	4	7 46 10.39	12.153	23 29 49.5	30.50	2 56.3
5	5 13 9.61	12.948	24 39 30.7	20.04	2 21.6	5	7 51 1.29	12.089	23 17 19.8	31.97	2 57.2
6	5 18 20.52	12.960	24 47 11.0	18.33	2 22.9	6	7 55 50.64	12.023	23 4 15.1	33.42	2 58.1
7	5 23 31.67	12.970	24 54 10.2	16.61	2 24.1	7	8 0 38.39	11.955	22 50 36.0	34.84	2 59.0
8	5 28 43.02	12.977	25 0 28.0	14.87	2 25.4	8	8 5 24.50	11.887	22 36 23.1	36.23	2 59.8
9	5 33 54.52	12.982	25 6 4.1	13.13	2 26.6	9	8 10 8.96	11.817	22 21 37.1	37.60	3 0.6
10	5 39 6.10	12.984	25 10 58.5	11.39	2 27.9	10	8 14 51.73	11.746	22 6 18.5	38.94	3 1.4
11	5 44 17.71	12.983	25 15 11.0	9.65	2 29.1	11	8 19 32.79	11.674	21 50 28.0	40.26	3 2.1
12	5 49 29.28	12.979	25 18 41.5	7.90	2 30.4	12	8 24 12.10	11.601	21 34 6.3	41.55	3 2.8
13	5 54 40.74	12.974	25 21 30.0	6.14	2 31.6	13	8 28 49.63	11.527	21 17 14.0	42.80	3 3.4
14	5 59 52.03	12.966	25 23 36.4	4.39	2 32.9	14	8 33 25.37	11.451	20 59 51.9	44.03	3 4.1
15	6 5 3.08	12.954	25 25 0.6	2.63	2 34.1	15	8 37 59.29	11.375	20 42 0.5	45.24	3 4.8
16	6 10 13.83	12.940	25 25 42.7	+ 0.88	2 35.3	16	8 42 31.36	11.298	20 23 40.6	46.42	3 5.4
17	6 15 24.21	12.923	25 25 42.7	− 0.87	2 36.6	17	8 47 1.58	11.220	20 4 52.9	47.56	3 5.9
18	6 20 34.15	12.904	25 25 0.7	2.62	2 37.8	18	8 51 29.91	11.141	19 45 38.1	48.67	3 6.4
19	6 25 43.58	12.882	25 23 36.9	4.36	2 39.0	19	8 55 56.34	11.061	19 25 56.9	49.75	3 6.9
20	6 30 52.43	12.856	25 21 31.4	6.10	2 40.2	20	9 0 20.85	10.981	19 5 50.1	50.80	3 7.4
21	6 36 0.63	12.827	25 18 44.3	7.83	2 41.4	21	9 4 43.43	10.900	18 45 18.4	51.83	3 7.8
22	6 41 8.10	12.795	25 15 15.8	9.55	2 42.6	22	9 9 4.04	10.818	18 24 22.5	52.82	3 8.2
23	6 46 14.79	12.761	25 11 6.2	11.25	2 43.8	23	9 13 22.68	10.735	18 3 3.2	53.78	3 8.6
24	6 51 20.62	12.724	25 6 15.7	12.95	2 44.9	24	9 17 39.32	10.652	17 41 21.2	54.71	3 8.9
25	6 56 25.53	12.685	25 0 44.7	14.63	2 46.1	25	9 21 53.96	10.568	17 19 17.3	55,61	3 9.2
26	7 1 29.45	12.642	24 54 33.5	16.30	2 47.2	26	9 26 6.58	10.483	16 56 52.3	56.47	3 9.5
27	7 6 32.32	12.597	24 47 42.4	17.95	2 48.3	27	9 30 17.17	10.398	16 34 7.0	57.30	3 9.7
28	7 11 34.07	12.549	24 40 11.8	19.59	2 49.4	28	9 34 25.72	10.313	16 11 2.0	58.10	3 9.9
29	7 16 34.65	12.499	24 32 2.1	21.21	2 50.4	29	9 38 32.22	10.228	15 47 38.2	58.87	3 10.1
30	7 21 33.99	12.446	24 23 13.8	22.81	2 51.4	30	9 42 36.67	10.142	15 23 56.4	59.61	3 10.2
31	7 26 32.04	12.391	24 13 47.3	24.39	2 52.4	31	9 46 39.06	10.056	14 59 57.2	60.32	3 10.3
32	7 31 28.75	12.334	+24 3 43.1	−25.95	2 53.4	32	9 50 39.38	+9.970	+14 35 41.4	−61.00	3 10.3

Day of the Month,	1st.	6th.	11th.	16th.	21st.	26th.	Day of the Month,	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter	6".7	6".8	7".0	7".2	7".5	7".7	Semidiameter	8".0	8".3	8".6	9".0	9".4	9".8
Hor. Parallax	6.9	7.1	7.3	7.5	7.7	8.0	Hor. Parallax	8.3	8.6	8.9	9.3	9.7	10.1

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	9 46 39.06	10.056	+14 59 57.2	−60.32	3 10.3
2	9 50 39.38	9.970	14 35 41.4	61.00	3 10.3
3	9 54 37.63	9.884	14 11 9.8	61.64	3 10.3
4	9 58 33.82	9.798	13 46 23.0	62.25	3 10.3
5	10 2 27.93	9.711	13 21 21.9	62.83	3 10.3
6	10 6 19.95	9.624	12 56 7.2	63.38	3 10.2
7	10 10 9.89	9.537	12 30 39.6	63.91	3 10.1
8	10 13 57.74	9.451	12 4 59.8	64.40	3 10.0
9	10 17 43.51	9.364	11 39 8.6	64.86	3 9.8
10	10 21 27.19	9.276	11 13 6.6	65.29	3 9.6
11	10 25 8.77	9.189	10 46 54.6	65.70	3 9.4
12	10 28 48.24	9.101	10 20 33.3	66.07	3 9.1
13	10 32 25.60	9.012	9 54 3.4	66.41	3 8.8
14	10 36 0.83	8.923	9 27 25.7	66.72	3 8.4
15	10 39 33.91	8.833	9 0 40.8	67.01	3 7.9
16	10 43 4.82	8.742	8 33 49.4	67.26	3 7.5
17	10 46 33.54	8.651	8 6 52.4	67.48	3 7.0
18	10 50 0.05	8.558	7 39 50.5	67.67	3 6.5
19	10 53 24.32	8.464	7 12 44.5	67.82	3 6.0
20	10 56 46.33	8.369	6 45 35.2	67.94	3 5.4
21	11 0 6.04	8.272	6 18 23.3	68.04	3 4.7
22	11 3 23.40	8.174	5 51 9.6	68.10	3 4.0
23	11 6 38.39	8.074	5 23 54.9	68.12	3 3.4
24	11 9 50.95	7.972	4 56 40.1	68.11	3 2.7
25	11 13 1.05	7.869	4 29 25.9	68.07	3 2.0
26	11 16 8.63	7.763	4 2 13.2	67.99	3 1.1
27	11 19 13.65	7.655	3 35 2.7	67.88	3 0.2
28	11 22 16.04	7.545	3 7 55.4	67.73	2 59.3
29	11 25 15.76	7.432	2 40 52.0	67.55	2 58.3
30	11 28 12.74	7.317	2 13 53.5	67.33	2 57.3
31	11 31 6.93	7.199	1 47 0.7	67.07	2 56.3
32	11 33 58.25	+7.078	+ 1 20 14.4	−66.78	2 55.2

AUGUST.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	11 33 58.25	+7.078	+1 20 14.4	−66.78	2 55.2
2	11 36 46.65	6.955	0 53 35.5	66.46	2 54.0
3	11 39 32.04	6.828	0 27 4.8	66.10	2 52.8
4	11 42 14.36	6.698	+0 0 43.3	65.69	2 51.5
5	11 44 53.52	6.565	−0 25 28.0	65.25	2 50.2
6	11 47 29.44	6.428	0 51 28.3	64.77	2 48.9
7	11 50 2.02	6.287	1 17 16.8	64.25	2 47.5
8	11 52 31.17	6.142	1 42 52.5	63.70	2 46.1
9	11 54 56.78	5.992	2 8 14.2	63.10	2 44.7
10	11 57 18.74	5.838	2 33 21.0	62.46	2 43.2
11	11 59 36.94	5.678	2 58 11.9	61.77	2 41.5
12	12 1 51.25	5.513	3 22 45.7	61.04	2 39.7
13	12 4 1.53	5.342	3 47 1.3	60.26	2 37.8
14	12 6 7.65	5.166	4 10 57.5	59.42	2 35.9
15	12 8 9.44	4.983	4 34 33.1	58.53	2 34.0
16	12 10 6.76	4.793	4 57 46.8	57.59	2 32.2
17	12 11 59.43	4.596	5 20 37.0	56.58	2 30.2
18	12 13 47.28	4.391	5 43 2.3	55.51	2 28.0
19	12 15 30.12	4.177	6 5 1.2	54.37	2 25.8
20	12 17 7.74	3.956	6 26 31.9	53.17	2 23.4
21	12 18 39.95	3.726	6 47 32.7	51.89	2 20.9
22	12 20 6.54	3.488	7 8 2.0	50.54	2 18.4
23	12 21 27.32	3.242	7 27 58.0	49.11	2 15.7
24	12 22 42.08	2.987	7 47 18.7	47.60	2 13.1
25	12 23 50.62	2.723	8 6 2.0	46.00	2 10.4
26	12 24 52.72	2.450	8 24 5.8	44.31	2 7.6
27	12 25 48.16	2.168	8 41 28.0	42.52	2 4.6
28	12 26 36.73	1.878	8 58 6.2	40.64	2 1.4
29	12 27 18.22	1.579	9 13 58.0	38.66	1 58.2
30	12 27 52.44	1.272	9 29 1.0	36.57	1 55.0
31	12 28 19.20	0.957	9 43 12.8	34.38	1 51.5
32	12 28 38.33	+0.636	−9 56 30.7	−32.09	1 47.8

Day of the Month,	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter	10″.3	10″.8	11″.4	12″.0	12″.7	13″.5
Hor. Parallax	10.6	11.2	11.7	12.4	13.2	14.0

Day of the Month,	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter	14″.6	15″.7	16″.8	18″.2	19″.7	21″.3
Hor. Parallax	15.1	16.2	17.4	18.8	20.3	22.0

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GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 28 38.33	+0.636	− 9 56 30.7	−32.09	1 47.8
2	12 28 49.67	+0.308	10 8 52.2	29.69	1 43.9
3	12 28 53.08	−0.025	10 20 14.7	27.17	1 39.9
4	12 28 48.44	0.363	10 30 35.4	24.54	1 35.9
5	12 28 35.65	0.704	10 39 51.6	21.79	1 31.7
6	12 28 14.62	1.048	10 48 0.5	18.94	1 27.4
7	12 27 45.32	1.393	10 54 59.6	15.98	1 23.0
8	12 27 7.76	1.737	11 0 46.5	12.91	1 18.4
9	12 26 21.96	2.079	11 5 18.3	9.73	1 13.7
10	12 25 27.99	2.417	11 8 32.6	6.45	1 8.9
11	12 24 25.97	2.750	11 10 27.0	− 3.08	1 4.0
12	12 23 16.07	3.075	11 10 50.7	+ 0.37	0 58.9
13	12 21 58.51	3.388	11 10 8.7	3.89	0 53.6
14	12 20 33.56	3.689	11 7 52.5	7.46	0 48.3
15	12 19 1.56	3.975	11 4 10.2	11.07	0 42.8
16	12 17 22.93	4.242	10 59 1.2	14.69	0 37.3
17	12 15 38.13	4.488	10 52 25.2	18.31	0 31.6
18	12 13 47.69	4.711	10 44 22.6	21.90	0 25.9
19	12 11 52.22	4.907	10 34 54.4	25.44	0 20.0
20	12 9 52.37	5.075	10 24 2.2	28.88	0 14.1
21	12 7 48.86	5.212	10 11 48.5	32.23	0 8.1
22	12 5 42.44	5.317	9 58 16.4	35.42	0 2.1 23 56.0
23	12 3 33.93	5.387	9 43 29.8	38.44	23 49.9
24	12 1 24.16	5.491	9 27 33.2	41.25	23 43.9
25	11 59 14.01	5.418	9 10 31.9	43.82	23 37.8
26	11 57 4.36	5.379	8 52 31.7	46.14	23 31.7
27	11 54 56.10	5.303	8 33 30.1	48.18	23 25.7
28	11 52 50.11	5.190	8 14 1.1	49.92	23 19.7
29	11 50 47.24	5.042	7 53 45.0	51.35	23 13.8
30	11 48 48.32	4.861	7 32 58.6	52.46	23 8.0
31	11 46 54.11	−4.650	− 7 11 49.5	+53.24	23 2.3

Day of the Month,	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter	23.″5	25.″4	27.″2	28.″9	30.″0	30.″5
Hor. Parallax	24.3	26.2	28.2	29.9	31.1	31.6

OCTOBER

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 46 54.11	−4.650	−7 11 49.5	+53.24	23 2.3
2	11 45 5.35	4.409	6 50 25.6	53.70	22 56.6
3	11 43 22.70	4.141	6 28 54.6	53.84	22 51.1
4	11 41 46.76	3.840	6 7 23.9	53.67	22 45.7
5	11 40 18.08	3.537	5 46 0.9	53.20	22 40.4
6	11 38 57.11	3.207	5 24 52.4	52.45	22 35.3
7	11 37 44.25	2.862	5 4 5.0	51.45	22 30.3
8	11 36 39.82	2.505	4 43 44.7	50.20	22 25.4
9	11 35 44.07	2.139	4 23 57.0	48.73	22 20.7
10	11 34 57.20	1.766	4 4 47.0	47.07	22 16.1
11	11 34 19.33	1.389	3 46 18.9	45.24	22 11.7
12	11 33 50.55	1.010	3 28 36.5	43.26	22 7.4
13	11 33 30.87	0.630	3 11 43.3	41.15	22 3.3
14	11 33 20.29	−0.252	2 55 42.2	38.92	21 59.3
15	11 33 18.74	+0.122	2 40 35.6	36.61	21 55.5
16	11 33 26.12	0.492	2 26 25.4	34.23	21 51.8
17	11 33 42.31	0.856	2 13 13.2	31.78	21 48.3
18	11 34 7.18	1.214	2 1 0.2	29.29	21 44.9
19	11 34 40.54	1.565	1 49 47.1	26.78	21 41.7
20	11 35 22.22	1.907	1 39 34.6	24.25	21 38.6
21	11 36 12.02	2.240	1 30 22.9	21.71	21 35.6
22	11 37 9.73	2.565	1 22 12.3	19.17	21 32.7
23	11 38 15.15	2.883	1 15 2.6	16.64	21 30.0
24	11 39 28.05	3.191	1 8 53.6	14.12	21 27.3
25	11 40 48.21	3.488	1 3 44.8	11.62	21 24.8
26	11 42 15.40	3.776	0 59 35.4	9.16	21 22.5
27	11 43 49.39	4.055	0 56 24.7	6.73	21 20.2
28	11 45 29.95	4.324	0 54 11.9	4.34	21 18.0
29	11 47 16.85	4.583	0 52 55.9	+ 2.00	21 16.0
30	11 49 9.86	4.833	0 52 35.7	− 0.30	21 14.0
31	11 51 8.76	5.074	0 53 10.2	2.56	21 12.1
32	11 53 13.33	+5.306	−0 54 38.1	− 4.76	21 10.3

Day of the Month,	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter	30.″3	29.″3	27.″9	26.″0	24.″2	22.″4
Hor. Parallax	31.3	30.3	28.8	26.9	25.0	23.1

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 53 13.33	+5.306	−0 54 38.1	− 4.76	21 10.3
2	11 55 23.35	5.528	0 56 58.3	6.91	21 8.6
3	11 57 38.61	5.742	1 0 9.5	9.01	21 7.0
4	11 59 58.90	5.947	1 4 10.3	11.05	21 5.5
5	12 2 24.03	6.144	1 8 59.3	13.03	21 4.0
6	12 4 53.78	6.333	1 14 35.1	14.95	21 2.7
7	12 7 27.97	6.514	1 20 56.2	16.81	21 1.3
8	12 10 6.41	6.687	1 28 1.3	18.61	21 0.0
9	12 12 48.92	6.854	1 35 48.9	20.35	20 58.9
10	12 15 35.35	7.014	1 44 17.6	22.03	20 57.8
11	12 18 25.52	7.167	1 53 26.0	23.65	20 56.8
12	12 21 19.28	7.313	2 3 12.6	25.21	20 55.8
13	12 24 16.50	7.453	2 13 36.1	26.72	20 54.8
14	12 27 17.03	7.589	2 24 35.0	28.17	20 53.9
15	12 30 20.76	7.720	2 36 8.0	29.57	20 53.1
16	12 33 27.56	7.846	2 48 13.8	30.91	20 52.3
17	12 36 37.32	7.967	3 0 51.1	32.19	20 51.6
18	12 39 49.94	8.084	3 13 58.6	33.43	20 50.9
19	12 43 5.33	8.197	3 27 35.1	34.61	20 50.2
20	12 46 23.39	8.307	3 41 39.5	35.74	20 49.6
21	12 49 44.04	8.413	3 56 10.4	36.82	20 49.1
22	12 53 7.19	8.516	4 11 6.6	37.86	20 48.6
23	12 56 32.79	8.617	4 26 27.1	38.84	20 48.1
24	13 0 0.78	8.715	4 42 10.6	39.78	20 47.6
25	13 3 31.09	8.810	4 58 16.0	40.67	20 47.2
26	13 7 3.65	8.903	5 14 42.2	41.51	20 46.9
27	13 10 38.41	8.993	5 31 28.1	42.30	20 46.6
28	13 14 15.32	9.082	5 48 32.5	43.05	20 46.3
29	13 17 54.33	9.169	6 5 54.3	43.75	20 45.9
30	13 21 35.40	9.254	6 23 32.4	44.41	20 45.6
31	13 25 18.49	9.337	6 41 25.6	45.02	20 45.4
32	13 29 3.55	+9.418	−6 59 32.8	−45.58	20 45.3

Day of the Month,	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter	20″.3	18″.6	17″.5	16″.3	15″.2	14″.3
Hor. Parallax	21.1	19.3	18.1	16.9	15.8	14.8

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	13 25 18.49	+9.337	− 6 41 25.6	−45.02	20 45.4
2	13 29 3.55	9.418	6 50 32.8	45.58	20 45.3
3	13 32 50.54	9.498	7 17 53.0	46.09	20 45.2
4	13 36 39.43	9.578	7 36 25.0	46.56	20 45.2
5	13 40 30.18	9.653	7 55 7.7	46.99	20 45.1
6	13 44 22.76	9.728	8 14 0.0	47.37	20 45.1
7	13 48 17.12	9.802	8 33 0.8	47.70	20 45.0
8	13 52 13.24	9.875	8 52 9.0	47.98	20 45.0
9	13 56 11.09	9.946	9 11 23.4	48.22	20 45.0
10	14 0 10.65	10.017	9 30 43.0	48.41	20 45.1
11	14 4 11.90	10.087	9 50 6.8	48.56	20 45.3
12	14 8 14.81	10.156	10 9 33.7	48.67	20 45.4
13	14 12 19.38	10.224	10 29 2.7	48.74	20 45.6
14	14 16 25.59	10.292	10 48 32.7	48.76	20 45.8
15	14 20 33.40	10.358	11 8 2.7	48.74	20 46.0
16	14 24 42.81	10.425	11 27 31.7	48.67	20 46.2
17	14 28 53.82	10.492	11 46 58.7	48.55	20 46.4
18	14 33 6.42	10.558	12 6 22.7	48.43	20 46.7
19	14 37 20.60	10.624	12 25 42.8	48.24	20 47.0
20	14 41 36.36	10.689	12 44 58.0	48.02	20 47.4
21	14 45 53.69	10.755	13 4 7.4	47.76	20 47.8
22	14 50 12.59	10.820	13 23 10.0	47.46	20 48.2
23	14 54 33.05	10.885	13 42 5.0	47.12	20 48.6
24	14 58 55.08	10.950	14 0 51.4	46.74	20 49.1
25	15 3 18.67	11.015	14 19 28.2	46.32	20 49.5
26	15 7 43.82	11.080	14 37 54.6	45.87	20 50.0
27	15 12 10.52	11.145	14 56 9.7	45.38	20 50.5
28	15 16 38.77	11.209	15 14 12.5	44.85	20 51.0
29	15 21 8.57	11.274	15 32 2.1	44.28	20 51.6
30	15 25 39.91	11.338	15 49 37.6	43.67	20 52.3
31	15 30 12.78	11.402	16 6 58.2	43.03	20 52.9
32	15 34 47.17	11.465	−16 24 2.9	−42.35	20 53.6

Day of the Month,	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter	13″.4	12″.7	12″.0	11″.4	10″.9	10″.4
Hor. Parallax	13.9	13.1	12.4	11.8	11.3	10.7

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 6 25.58	+3.261	+2 7 33.2	−18.08	17 21.7
2	12 7 43.20	3.207	2 0 23.8	17.70	17 19.1
3	12 8 59.51	3.152	1 53 23.5	17.32	17 16.4
4	12 10 14.49	3.096	1 46 32.5	16.93	17 13.7
5	12 11 28.09	3.038	1 39 51.0	16.53	17 11.0
6	12 12 40.30	2.979	1 33 19.1	16.12	17 8.2
7	12 13 51.09	2.919	1 26 57.1	15.71	17 5.4
8	12 15 0.42	2.858	1 20 45.2	15.28	17 2.6
9	12 16 8.25	2.795	1 14 43.5	14.85	16 59.8
10	12 17 14.56	2.731	1 8 52.3	14.41	16 57.0
11	12 18 19.31	2.665	1 3 11.9	13.96	16 54.1
12	12 19 22.46	2.597	0 57 42.4	13.50	16 51.2
13	12 20 23.97	2.528	0 52 24.1	13.03	16 48.2
14	12 21 23.80	2.457	0 47 17.2	12.54	16 45.3
15	12 22 21.90	2.385	0 42 22.0	12.05	16 42.3
16	12 23 18.25	2.311	0 37 38.7	11.55	16 39.3
17	12 24 12.80	2.235	0 33 7.5	11.04	16 36.2
18	12 25 5.50	2.157	0 28 48.7	10.52	16 33.1
19	12 25 56.32	2.078	0 24 42.5	9.99	16 30.0
20	12 26 45.21	1.997	0 20 49.1	9.45	16 26.9
21	12 27 32.14	1.914	0 17 8.8	8.91	16 23.7
22	12 28 17.06	1.829	0 13 41.7	8.35	16 20.5
23	12 28 59.93	1.743	0 10 28.1	7.78	16 17.3
24	12 29 40.72	1.655	0 7 28.2	7.21	16 14.0
25	12 30 19.39	1.566	0 4 42.2	6.63	16 10.7
26	12 30 55.90	1.475	+0 2 10.3	6.04	16 7.3
27	12 31 30.21	1.383	−0 0 7.4	5.44	16 3.9
28	12 32 2.28	1.289	0 2 10.8	4.83	16 0.5
29	12 32 32.08	1.194	0 3 59.5	4.22	15 57.0
30	12 32 59.56	1.097	0 5 33.4	3.60	15 53.5
31	12 33 24.70	0.998	0 6 52.4	2.98	15 50.0
32	12 33 47.44	+0.897	−0 7 56.4	− 2.35	15 46.4

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 33 47.44	+0.897	−0 7 56.4	− 2.35	15 46.4
2	12 34 7.76	0.795	0 8 45.1	1.71	15 42.8
3	12 34 25.61	0.691	0 9 18.5	1.06	15 39.1
4	12 34 40.95	0.586	0 9 36.3	− 0.41	15 35.4
5	12 34 53.75	0.479	0 9 38.3	+ 0.25	15 31.7
6	12 35 3.95	0.370	0 9 24.4	0.91	15 27.9
7	12 35 11.51	0.259	0 8 54.5	1.58	15 24.1
8	12 35 16.40	0.147	0 8 8.3	2.26	15 20.2
9	12 35 18.57	+0.033	0 7 5.7	2.95	15 16.3
10	12 35 17.99	−0.082	0 5 46.6	3.64	15 12.3
11	12 35 14.62	0.199	0 4 10.9	4.34	15 8.3
12	12 35 8.41	0.318	0 2 18.5	5.04	15 4.2
13	12 34 59.35	0.438	−0 0 9.2	5.74	15 0.1
14	12 34 47.40	0.558	+0 2 17.0	6.44	14 55.9
15	12 34 32.55	0.680	0 5 0.0	7.15	14 51.7
16	12 34 14.77	0.802	0 7 59.9	7.85	14 47.5
17	12 33 54.04	0.925	0 11 16.7	8.55	14 43.2
18	12 33 30.37	1.048	0 14 50.2	9.24	14 38.8
19	12 33 3.74	1.171	0 18 40.3	9.93	14 34.4
20	12 32 34.16	1.294	0 22 47.0	10.62	14 30.0
21	12 32 1.64	1.416	0 27 10.0	11.30	14 25.5
22	12 31 26.18	1.538	0 31 49.0	11.96	14 20.9
23	12 30 47.81	1.659	0 36 43.9	12.61	14 16.3
24	12 30 6.55	1.779	0 41 54.2	13.25	14 11.7
25	12 29 22.44	1.897	0 47 19.6	13.87	14 7.0
26	12 28 35.51	2.014	0 52 59.7	14.47	14 2.2
27	12 27 45.80	2.129	0 58 54.1	15.05	13 57.4
28	12 26 53.36	2.241	1 5 2.4	15.62	13 52.6
29	12 25 58.24	2.351	1 11 23.9	16.17	13 47.8
30	12 25 0.50	2.459	1 17 58.2	16.69	13 42.9
31	12 24 0.21	2.564	1 24 44.8	17.19	13 37.9
32	12 22 57.43	−2.667	+1 31 43.0	+17.66	13 32.9

Day of the Month,	1st.	9th.	17th.	25th.
Semidiameter	4″.3	4″.6	4″.9	5″.3
Horizontal Parallax	7.3	7.8	8.3	9.0

Day of the Month,	2d.	10th.	18th.	26th.
Semidiameter	5″.7	6″.1	6″.6	7″.0
Horizontal Parallax	9.7	10.4	11.2	11.9

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 25 58.24	−2.351	+1 11 23.9	+16.17	13 47.8
2	12 25 0.50	2.459	1 17 58.2	16.69	13 42.9
3	12 24 0.21	2.564	1 24 44.8	17.19	13 37.9
4	12 22 57.43	2.667	1 31 43.0	17.66	13 32.9
5	12 21 52.23	2.766	1 38 52.2	18.10	13 27.9
6	12 20 44.70	2.861	1 46 11.7	18.52	13 22.8
7	12 19 34.93	2.953	1 53 40.8	18.91	13 17.7
8	12 18 23.00	3.040	2 1 18.8	19.26	13 12.5
9	12 17 9.02	3.123	2 9 5.0	19.58	13 7.4
10	12 15 53.09	3.202	2 16 58.4	19.87	13 2.2
11	12 14 35.34	3.276	2 24 58.3	20.12	12 56.9
12	12 13 15.87	3.345	2 33 3.7	20.33	12 51.7
13	12 11 54.82	3.408	2 41 13.7	20.50	12 46.4
14	12 10 32.33	3.465	2 49 27.5	20.63	12 41.1
15	12 9 8.53	3.516	2 57 43.9	20.72	12 35.7
16	12 7 43.58	3.561	3 6 2.0	20.77	12 30.4
17	12 6 17.63	3.600	3 14 20.7	20.78	12 25.0
18	12 4 50.84	3.631	3 22 39.1	20.74	12 19.7
19	12 3 23.39	3.656	3 30 55.9	20.65	12 14.3
20	12 1 55.43	3.673	3 39 10.1	20.52	12 8.9
21	12 0 27.15	3.683	3 47 20.6	20.34	12 3.5
22	11 58 58.72	3.685	3 55 26.3	20.12	11 58.1
23	11 57 30.31	3.681	4 3 26.1	19.86	11 52.7
24	11 56 2.10	3.669	4 11 19.0	19.55	11 47.3
25	11 54 34.27	3.650	4 19 4.0	19.20	11 41.9
26	11 53 6.97	3.624	4 26 40.0	18.80	11 36.6
27	11 51 40.38	3.591	4 34 6.2	18.37	11 31.2
28	11 50 14.66	3.551	4 41 21.6	17.90	11 25.8
29	11 48 49.97	3.505	4 48 25.4	17.40	11 20.5
30	11 47 26.45	3.453	4 55 16.7	16.87	11 15.2
31	11 46 4.25	3.395	5 1 54.8	16.30	11 9.9
32	11 44 43.50	−3.332	+5 8 19.1	+15.71	11 4.7

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 44 43.50	−3.332	+5 8 19.1	+15.71	11 4.7
2	11 43 24.35	3.263	5 14 28.8	15.09	10 59.4
3	11 42 6.91	3.189	5 20 23.5	14.45	10 54.2
4	11 40 51.30	3.110	5 26 2.5	13.79	10 49.1
5	11 39 37.64	3.027	5 31 25.4	13.11	10 43.9
6	11 38 26.03	2.940	5 36 31.7	12.41	10 38.8
7	11 37 16.58	2.848	5 41 21.0	11.70	10 33.8
8	11 36 9.37	2.752	5 45 53.1	10.97	10 28.8
9	11 35 4.49	2.653	5 50 7.5	10.23	10 23.8
10	11 34 2.03	2.551	5 54 4.0	9.47	10 18.8
11	11 33 2.07	2.445	5 57 42.3	8.71	10 13.9
12	11 32 4.68	2.337	6 1 2.2	7.94	10 9.0
13	11 31 9.92	2.226	6 4 3.6	7.17	10 4.2
14	11 30 17.86	2.113	6 6 46.4	6.39	9 59.4
15	11 29 28.54	1.997	6 9 10.3	5.60	9 54.7
16	11 28 42.02	1.879	6 11 15.3	4.82	9 50.0
17	11 27 58.35	1.760	6 13 1.4	4.03	9 45.4
18	11 27 17.55	1.639	6 14 28.6	3.24	9 40.8
19	11 26 39.67	1.517	6 15 36.8	2.45	9 36.3
20	11 26 4.72	1.395	6 16 26.1	1.66	9 31.8
21	11 25 32.72	1.272	6 16 56.6	0.88	9 27.3
22	11 25 3.68	1.149	6 17 8.3	+ 0.10	9 22.9
23	11 24 37.61	1.025	6 17 1.3	− 0.68	9 18.6
24	11 24 14.51	0.901	6 16 35.8	1.44	9 14.3
25	11 23 54.36	0.778	6 15 52.0	2.20	9 10.0
26	11 23 37.15	0.656	6 14 50.2	2.95	9 5.8
27	11 23 22.87	0.534	6 13 30.5	3.69	9 1.7
28	11 23 11.49	0.414	6 11 53.1	4.42	8 57.6
29	11 23 2.99	0.295	6 9 58.5	5.14	8 53.5
30	11 22 57.34	0.177	6 7 46.7	5.84	8 49.5
31	11 22 54.51	−0.060	6 5 18.2	6.53	8 45.6
32	11 22 54.45	+0.055	+ 6 2 33.1	− 7.22	8 41.7

Day of the Month,	6th.	14th.	22d.	30th.
Semidiameter	7.″4	7.″6	7.″7	7.″7
Horizontal Parallax	12.6	13.0	13.1	13.1

Day of the Month,	7th.	15th.	23d.	31st.
Semidiameter	7.″5	7.″2	6.″8	6.″4
Horizontal Parallax	12.7	12.2	11.6	10.9

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 22 54.51	−0.060	+6 5 18.2	−6.53	8 45.6
2	11 22 54.45	+0.055	6 2 33.1	7.22	8 41.7
3	11 22 57.14	0.169	5 59 31.8	7.89	8 37.8
4	11 23 2.54	0.281	5 56 14.6	8.55	8 34.0
5	11 23 10.61	0.391	5 52 41.7	9.19	8 30.2
6	11 23 21.32	0.500	5 48 53.3	9.83	8 26.4
7	11 23 34.62	0.608	5 44 49.8	10.46	8 22.7
8	11 23 50.48	0.714	5 40 31.5	11.07	8 19.1
9	11 24 8.86	0.818	5 35 58.6	11.67	8 15.5
10	11 24 29.72	0.921	5 31 11.3	12.26	8 11.9
11	11 24 53.04	1.022	5 26 9.9	12.85	8 8.4
12	11 25 18.76	1.122	5 20 54.6	13.42	8 4.9
13	11 25 46.86	1.220	5 15 25.7	13.99	8 1.4
14	11 26 17.30	1.317	5 9 43.3	14.54	7 58.0
15	11 26 50.05	1.412	5 3 47.8	15.09	7 54.6
16	11 27 25.07	1.506	4 57 39.3	15.62	7 51.3
17	11 28 2.32	1.598	4 51 18.0	16.15	7 48.0
18	11 28 41.76	1.688	4 44 44.1	16.67	7 44.7
19	11 29 23.35	1,777	4 37 58.0	17.18	7 41.5
20	11 30 7.06	1.864	4 30 59.7	17.68	7 38.3
21	11 30 52.85	1.950	4 23 49.5	18.17	7 35.1
22	11 31 40.68	2.034	4 16 27.6	18.65	7 32.0
23	11 32 30.50	2.117	4 8 54.3	19.12	7 28.9
24	11 33 22.27	2.197	4 1 9.7	19.58	7 25.9
25	11 34 15.95	2.276	3 53 14.2	20.04	7 22.8
26	11 35 11.51	2.353	3 45 7.9	20.49	7 19.8
27	11 36 8.90	2.429	3 36 51.1	20.92	7 16.8
28	11 37 8.08	2.503	3 28 24.0	21.34	7 13.9
29	11 38 9.00	2.575	3 19 46.9	21.75	7 11.0
30	11 39 11.64	2.645	3 10 59.9	22.16	7 8.1
31	11 40 15.96	2.714	3 2 3.3	22.56	7 5.3
32	11 41 21.91	+2.781	+2 52 57.3	−22.94	7 2.4

Day of the Month,	1st.	9th.	17th.	25th.
Semidiameter	6″.4	6″.0	5″.7	5″.3
Horizontal Parallax	10.9	10.3	9.6	9.1

JUNE.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 41 21.91	+2.781	+2 52 57.3	−22.94	7 2.4
2	11 42 29.46	2.847	2 43 42.1	23.32	6 59.6
3	11 43 38.57	2.912	2 34 18.0	23.69	6 56.8
4	11 44 49.22	2.975	2 24 45.1	24.05	6 54.1
5	11 46 1.37	3.037	2 15 3.6	24.40	6 51.4
6	11 47 15.00	3.098	2 5 13.6	24.75	6 48.7
7	11 48 30.08	3.158	1 55 15.4	25.09	6 46.0
8	11 49 46.58	3.217	1 45 9.1	25.43	6 43.3
9	11 51 4.48	3.275	1 34 54.9	25.76	6 40.7
10	11 52 23.76	3.332	1 24 32.9	26.08	6 38.1
11	11 53 44.39	3.388	1 14 3.2	26.39	6 35.5
12	11 55 6.36	3.443	1 3 26.0	26.70	6 32.9
13	11 56 29.64	3.497	0 52 41.5	27.01	6 30.4
14	11 57 54.22	3.551	0 41 49.7	27.31	6 27.9
15	11 59 20.07	3.603	0 30 50.9	27.60	6 25.4
16	12 0 47.18	3.655	0 19 45.1	27.89	6 22.9
17	12 2 15.52	3.706	+0 8 32.4	28.17	6 20.4
18	12 3 45.07	3.756	−0 2 46.9	28.44	6 18.0
19	12 5 15.82	3.805	0 14 12.8	28.71	6 15.6
20	12 6 47.74	3.854	0 25 45.0	28.97	6 13.2
21	12 8 20.81	3.901	0 37 23.5	29.23	6 10.8
22	12 9 55.01	3.948	0 49 8.1	29.48	6 8.4
23	12 11 30.32	3.994	1 0 58.6	29.72	6 6.1
24	12 13 6.72	4.039	1 12 54.8	29.96	6 3.7
25	12 14 44.20	4.083	1 24 56.6	30.19	6 1.4
26	12 16 22.73	4.127	1 37 3.8	30.41	5 59.1
27	12 18 2.29	4.170	1 49 16.2	30.62	5 56.9
28	12 19 42.86	4.212	2 1 33.8	30.83	5 54.6
29	12 21 24.44	4.253	2 13 56.2	31.03	5 52.4
30	12 23 7.00	4.294	2 26 23.4	31.23	5 50.1
31	12 24 50.53	4.334	2 38 55.2	31.42	5 47.9
32	12 26 35.02	+4.373	−2 51 31.5	−31.60	5 45.7

Day of the Month,	2d.	10th.	18th.	26th.
Semidiameter	5″.0	4″.8	4″.5	4″.3
Horizontal Parallax	8.5	8.1	7.7	7.3

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 24 50.53	+4.334	−2 38 55.2	−31.42	5 47.9
2	12 26 35.02	4.373	2 51 31.5	31.60	5 45.7
3	12 28 20.45	4.412	3 4 12.0	31.78	5 43.5
4	12 30 6.81	4.451	3 16 56.7	31.95	5 41.4
5	12 31 54.09	4.489	3 29 45.4	32.11	5 39.2
6	12 33 42.28	4.527	3 42 38.0	32.27	5 37.1
7	12 35 31.38	4.565	3 55 34.4	32.42	5 35.0
8	12 37 21.38	4.602	4 8 34.3	32.57	5 32.9
9	12 39 12.28	4.639	4 21 37.8	32.72	5 30.8
10	12 41 4.07	4.676	4 34 44.7	32.86	5 28.7
11	12 42 56.74	4.713	4 47 54.9	32.99	5 26.7
12	12 44 50.29	4.750	5 1 8.3	33.12	5 24.6
13	12 46 44.72	4.786	5 14 24.8	33.25	5 22.6
14	12 48 40.01	4.822	5 27 44.2	33.37	5 20.6
15	12 50 36.18	4.858	5 41 6.4	33.48	5 18.6
16	12 52 33.23	4.894	5 54 31.3	33.59	5 16.6
17	12 54 31.12	4.930	6 7 58.7	33.69	5 14.6
18	12 56 29.84	4.965	6 21 28.6	33.79	5 12.7
19	12 58 29.39	5.000	6 35 0.7	33.88	5 10.7
20	13 0 29.79	5.034	6 48 35.0	33.97	5 8.8
21	13 2 31.03	5.069	7 2 11.2	34.05	5 6.9
22	13 4 33.09	5.103	7 15 49.3	34.12	5 5.0
23	13 6 35.97	5.137	7 29 29.0	34.18	5 3.1
24	13 8 39.65	5.170	7 43 10.1	34.24	5 1.2
25	13 10 44.14	5.204	7 56 52.6	34.29	4 59.3
26	13 12 49.43	5.237	8 10 36.3	34.34	4 57.5
27	13 14 55.51	5.270	8 24 20.9	34.38	4 55.6
28	13 17 2.37	5.302	8 38 6.4	34.41	4 53.8
29	13 19 10.01	5.335	8 51 52.5	34.43	4 52.0
30	13 21 18.43	5.367	9 5 39.2	34.45	4 50.2
31	13 23 27.63	5.400	9 19 26.2	34.46	4 48.4
32	13 25 37.61	+5.432	−9 33 13.4	−34.47	4 46.7

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	13 25 37.61	+5.432	− 9 33 13.4	−34.47	4 46.7
2	13 27 48.36	5.464	9 47 0.7	34.47	4 44.9
3	13 29 59.89	5.496	10 0 47.9	34.46	4 43.2
4	13 32 12.20	5.529	10 14 34.8	34.45	4 41.4
5	13 34 25.28	5.561	10 28 21.4	34.43	4 39.7
6	13 36 39.14	5.594	10 42 7.4	34.41	4 38.0
7	13 38 53.78	5.627	10 55 52.8	34.38	4 36.3
8	13 41 9.21	5.660	11 9 37.5	34.34	4 34.6
9	13 43 25.43	5.692	11 23 21.2	34.30	4 33.0
10	13 45 42.44	5.725	11 37 3.8	34.25	4 31.3
11	13 48 0.24	5.758	11 50 45.2	34.20	4 29.7
12	13 50 18.83	5.791	12 4 25.3	34.14	4 28.0
13	13 52 38.22	5.825	12 18 3.9	34.07	4 26.4
14	13 54 58.41	5.858	12 31 40.8	34.00	4 24.8
15	13 57 19.39	5.891	12 45 15.9	33.92	4 23.2
16	13 59 41.17	5.924	12 58 49.0	33.83	4 21.6
17	14 2 3.75	5.957	13 12 20.0	33.74	4 20.1
18	14 4 27.13	5.991	13 25 48.6	33.64	4 18.5
19	14 6 51.30	6.024	13 39 14.7	33.53	4 17.0
20	14 9 16.26	6.057	13 52 38.2	33.41	4 15.5
21	14 11 42.01	6.090	14 5 58.7	33.29	4 14.0
22	14 14 8.55	6.122	14 19 16.2	33.16	4 12.5
23	14 16 35.89	6.155	14 32 30.5	33.02	4 11.0
24	14 19 4.01	6.188	14 45 41.3	32.87	4 9.5
25	14 21 32.92	6.221	14 58 48.5	32.72	4 8.1
26	14 24 2.62	6.254	15 11 51.9	32.56	4 6.6
27	14 26 33.10	6.287	15 24 51.2	32.39	4 5.2
28	14 29 4.37	6.320	15 37 46.4	32.21	4 3.8
29	14 31 36.43	6.352	15 50 37.2	32.02	4 2.4
30	14 34 9.27	6.385	16 3 23.4	31.83	4 1.0
31	14 36 42.90	6.418	16 16 4.9	31.63	3 59.6
32	14 39 17.32	+6.451	−16 28 41.4	−31.42	3 58.2

Day of the Month,	4th.	12th.	20th.	28th.
Semidiameter	4″.1	3″.9	3″.8	3″.6
Horizontal Parallax	6.9	6.7	6.4	6.2

Day of the Month,	5th.	13th.	21st.	29th.
Semidiameter	3″.5	3″.4	3″.3	3″.2
Horizontal Parallax	5.9	5.7	5.6	5.4

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	14 39 17.32	+6.451	−16 28 41.4	−31.42	3 58.2
2	14 41 52.54	6.484	16 41 12.9	31.20	3 56.9
3	14 44 28.55	6.517	16 53 39.1	30.98	3 55.5
4	14 47 5.36	6.551	17 5 59.9	30.75	3 54.2
5	14 49 42.98	6.584	17 18 15.1	30.51	3 52.9
6	14 52 21.40	6.618	17 30 24.5	30.27	3 51.6
7	14 55 0.63	6.651	17 42 27.9	30.02	3 50.3
8	14 57 40.67	6.685	17 54 25.3	29.76	3 49.0
9	15 0 21.52	6.719	18 6 16.3	29.49	3 47.8
10	15 3 3.19	6.753	18 18 0.8	29.22	3 46.5
11	15 5 45.67	6.787	18 29 38.6	28.93	3 45.3
12	15 8 28.97	6.821	18 41 9.5	28.64	3 44.1
13	15 11 13.08	6.855	18 52 33.4	28.34	3 42.9
14	15 13 58.01	6.889	19 3 50.1	28.04	3 41.7
15	15 16 43.75	6.923	19 14 59.3	27.72	3 40.5
16	15 19 30.30	6.956	19 26 0.8	27.40	3 39.4
17	15 22 17.65	6.990	19 36 54.5	27.07	3 38.2
18	15 25 5.81	7.023	19 47 40.2	26.73	3 37.1
19	15 27 54.76	7.056	19 58 17.5	26.38	3 35.9
20	15 30 44.51	7.089	20 8 46.4	26.02	3 34.8
21	15 33 35.04	7.122	20 19 6.6	25.65	3 33.7
22	15 36 26.36	7.154	20 29 17.9	25.28	3 32.7
23	15 39 18.45	7.187	20 39 20.1	24.90	3 31.6
24	15 42 11.32	7.219	20 49 13.0	24.51	3 30.5
25	15 45 4.95	7.251	20 58 56.4	24.11	3 29.5
26	15 47 59.35	7.282	21 8 30.0	23.70	3 28.4
27	15 50 54.50	7.314	21 17 53.8	23.28	3 27.4
28	15 53 50.41	7.345	21 27 7.4	22.85	3 26.4
29	15 56 47.07	7.376	21 36 10.7	22.42	3 25.4
30	15 59 44.47	7.407	21 45 3.6	21.98	3 24.4
31	16 2 42.62	7.438	21 53 45.8	21.53	3 23.5
32	16 5 41.50	+7.469	−22 2 17.1	−21.08	3 22.5

OCTOBER

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	16 2 42.62	+7.438	−21 53 45.8	−21.53	3 23.5
2	16 5 41.50	7.469	22 2 17.1	21.08	3 22.5
3	16 8 41.12	7.500	22 10 37.4	20.61	3 21.6
4	16 11 41.47	7.530	22 18 46.5	20.14	3 20.6
5	16 14 42.55	7.560	22 26 44.3	19.66	3 19.7
6	16 17 44.35	7.590	22 34 30.5	19.18	3 18.8
7	16 20 46.87	7.620	22 42 4.9	18.69	3 17.9
8	16 23 50.09	7.649	22 49 27.4	18.19	3 17.0
9	16 26 54.02	7.678	22 56 37.9	17.68	3 16.1
10	16 29 58.64	7.707	23 3 36.0	17.17	3 15.3
11	16 33 3.95	7.735	23 10 21.7	16.64	3 14.4
12	16 36 9.94	7.763	23 16 54.8	16.11	3 13.6
13	16 39 16.59	7.791	23 23 15.2	15.57	3 12.7
14	16 42 23.90	7.818	23 29 22.5	15.03	3 11.9
15	16 45 31.86	7.845	23 35 16.6	14.48	3 11.1
16	16 48 40.44	7.871	23 40 57.5	13.92	3 10.3
17	16 51 49.64	7.896	23 46 24.9	13.35	3 9.5
18	16 54 59.44	7.921	23 51 38.6	12.78	3 8.8
19	16 58 9.83	7.945	23 56 38.4	12.20	3 8.0
20	17 1 20.79	7.968	24 1 24.3	11.62	3 7.2
21	17 4 32.31	7.991	24 5 56.1	11.03	3 6.5
22	17 7 44.37	8.013	24 10 13.5	10.43	3 5.7
23	17 10 56.95	8.035	24 14 16.5	9.82	3 5.0
24	17 14 10.05	8.056	24 18 5.0	9.21	3 4.3
25	17 17 23.65	8.076	24 21 38.8	8.60	3 3.6
26	17 20 37.73	8.096	24 24 57.7	7.98	3 2.9
27	17 23 52.27	8.115	24 28 1.6	7.35	3 2.2
28	17 27 7.26	8.134	24 30 50.5	6.72	3 1.5
29	17 30 22.70	8.152	24 33 24.2	6.09	3 0.8
30	17 33 38.56	8.169	24 35 42.6	5.45	3 0.1
31	17 36 54.83	8.186	24 37 45.6	4.80	2 59.4
32	17 40 11.49	+8.202	−24 39 33.0	− 4.15	2 58.8

Day of the Month,	6th.	14th.	22d.	30th.
Semidiameter	3.″1	3.″0	3.″0	2.″9
Horizontal Parallax	5.3	5.1	5.0	4.9

Day of the Month,	8th.	16th.	24th.	32d.
Semidiameter	2.″8	2.″8	″ 2.7	2.″7
Horizontal Parallax	4.8	4.7	4.6	4.6

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon. h m s	Var. of R. A. for 1 Hour. Noon. s	Apparent Declination. Noon. ° ′ ″	Var. of Dec. for 1 Hour. Noon. ″	Meridian Passage. h m
1	17 40 11.49	+8.202	−24 39 33.0	− 4.15	2 58.8
2	17 43 28.54	8.218	24 41 4.9	3.50	2 58.1
3	17 46 45.96	8.233	24 42 21.1	2.85	2 57.5
4	17 50 3.72	8.247	24 43 21.5	2.19	2 56.8
5	17 53 21.82	8.261	24 44 6.0	1.52	2 56.2
6	17 56 40.25	8.274	24 44 34.6	0.86	2 55.6
7	17 59 58.98	8.287	24 44 47.2	− 0.19	2 54.9
8	18 3 18.00	8.298	24 44 43.8	+ 0.48	2 54.3
9	18 6 37.29	8.309	24 44 24.2	1.15	2 53.7
10	18 9 56.83	8.319	24 43 48.4	1.83	2 53.1
11	18 13 16.61	8.329	24 42 56.3	2.51	2 52.4
12	18 16 36.61	8.337	24 41 48.0	3.19	2 51.8
13	18 19 56.80	8.345	24 40 23.3	3.87	2 51.2
14	18 23 17.16	8.352	24 38 42.2	4.55	2 50.6
15	18 26 37.68	8.358	24 36 44.8	5.24	2 50.0
16	18 29 58.33	8.363	24 34 30.9	5.92	2 49.4
17	18 33 19.09	8.367	24 32 0.5	6.61	2 48.8
18	18 36 39.95	8.370	24 29 13.7	7.30	2 48.2
19	18 40 0.87	8.373	24 26 10.4	7.98	2 47.6
20	18 43 21.85	8.375	24 22 50.7	8.67	2 47.1
21	18 46 42.86	8.376	24 19 14.5	9.35	2 46.5
22	18 50 3.88	8.376	24 15 21.9	10.04	2 45.9
23	18 53 24.89	8.375	24 11 12.9	10.72	2 45.3
24	18 56 45.89	8.374	24 6 47.5	11.40	2 44.7
25	19 0 6.84	8.372	24 2 5.7	12.08	2 44.1
26	19 3 27.74	8.369	23 57 7.7	12.76	2 43.5
27	19 6 48.56	8.366	23 51 53.4	13.43	2 42.9
28	19 10 9.30	8.362	23 46 22.9	14.11	2 42.3
29	19 13 29.93	8.357	23 40 36.2	14.78	2 41.7
30	19 16 50.44	8.352	23 34 33.4	15.45	2 41.1
31	19 20 10.83	8.347	23 28 14.6	16.12	2 40.5
32	19 23 31.08	+8.341	−23 21 39.9	+16.78	2 39.9

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon. h m s	Var. of R. A. for 1 Hour. Noon. s	Apparent Declination. Noon. ° ′ ″	Var. of Dec. for 1 Hour. Noon. ″	Meridian Passage. h m
1	19 20 10.83	+8.347	−23 28 14.6	+16.12	2 40.5
2	19 23 31.08	8.341	23 21 39.9	16.78	2 39.9
3	19 26 51.16	8.334	23 14 49.3	17.44	2 39.3
4	19 30 11.08	8.326	23 7 42.9	18.10	2 38.7
5	19 33 30.82	8.318	23 0 20.8	18.75	2 38.1
6	19 36 50.36	8.310	22 52 43.0	19.40	2 37.5
7	19 40 9.69	8.301	22 44 49.7	20.04	2 36.8
8	19 43 28.79	8.291	22 36 41.0	20.68	2 36.2
9	19 46 47.66	8.281	22 28 17.0	21.32	2 35.6
10	19 50 6.28	8.270	22 19 37.7	21.95	2 34.9
11	19 53 24.63	8.259	22 10 43.4	22.58	2 34.3
12	19 56 42.70	8.247	22 1 34.1	23.20	2 33.7
13	20 0 0.48	8.235	21 52 10.0	23.81	2 33.0
14	20 3 17.96	8.222	21 42 31.1	24.42	2 32.4
15	20 6 35.12	8.208	21 32 37.7	25.03	2 31.7
16	20 9 51.94	8.194	21 22 29.9	25.63	2 31.1
17	20 13 8.43	8.179	21 12 7.8	26.22	2 30.4
18	20 16 24.55	8.164	21 1 31.5	26.80	2 29.7
19	20 19 40.31	8.149	20 50 41.3	27.38	2 29.0
20	20 22 55.69	8.133	20 39 37.3	27.95	2 28.3
21	20 26 10.69	8.117	20 28 19.6	28.52	2 27.6
22	20 29 25.29	8.100	20 16 48.5	29.08	2 26.9
23	20 32 39.49	8.083	20 5 4.1	29.63	2 26.2
24	20 35 53.28	8.066	19 53 6.5	30.17	2 25.5
25	20 39 6.66	8.049	19 40 56.0	30.70	2 24.8
26	20 42 19.62	8.031	19 28 32.7	31.23	2 24.1
27	20 45 32.15	8.013	19 15 56.9	31.75	2 23.3
28	20 48 44.26	7.996	19 3 8.6	32.26	2 22.6
29	20 51 55.93	7.978	18 50 8.1	32.77	2 21.9
30	20 55 7.18	7.960	18 36 55.5	33.27	2 21.1
31	20 58 17.99	7.941	18 23 31.0	33.76	2 20.3
32	21 1 28.37	+7.923	−18 9 54.9	+34.24	2 19.6

Day of the Month,	1st.	9th.	17th.	25th.
Semidiameter	2″.7	2″.6	2″.6	2″.6
Horizontal Parallax	4.6	4.5	4.4	4.3

Day of the Month,	3d.	11th.	19th.	27th.	35th.
Semidiameter	2″.5	2″.5	2″.4	2″.4	2″.4
Horizontal Parallax	4.3	4.2	4.2	4.1	4.0

GREENWICH MEAN TIME.

JANUARY.

5/

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	5 11 58.57	−1.268	+22 33 6.6	−1.02	10 27.3
2	5 11 28.39	1.247	22 32 42.4	1.01	10 22.8
3	5 10 58.72	1.225	22 32 18.5	0.99	10 18.4
4	5 10 29.59	1.203	22 31 55.0	0.97	10 14.0
5	5 10 1.01	1.179	22 31 31.9	0.95	10 9.6
6	5 9 33.01	1.155	22 31 9.2	0.93	10 5.2
7	5 9 5.60	1.130	22 30 47.0	0.91	10 0.8
8	5 8 38.80	1.104	22 30 25.4	0.89	9 56.4
9	5 8 12.62	1.077	22 30 4.3	0.87	9 52.0
10	5 7 47.09	1.050	22 29 43.8	0.85	9 47.7
11	5 7 22.23	1.022	22 29 23.9	0.82	9 43.4
12	5 6 58.04	0.994	22 29 4.6	0.79	9 39.1
13	5 6 34.54	0.965	22 28 46.0	0.76	9 34.8
14	5 6 11.75	0.935	22 28 28.2	0.73	9 30.5
15	5 5 49.67	0.905	22 28 11.2	0.70	9 26.2
16	5 5 28.33	0.874	22 27 54.9	0.67	9 21.9
17	5 5 7.74	0.842	22 27 39.4	0.63	9 17.6
18	5 4 47.92	0.810	22 27 24.7	0.59	9 13.3
19	5 4 28.87	0.777	22 27 11.0	0.55	9 9.1
20	5 4 10.61	0.744	22 26 58.3	0.51	9 4.9
21	5 3 53.15	0.711	22 26 46.5	0.47	9 0.7
22	5 3 36.50	0.677	22 26 35.6	0.43	8 56.5
23	5 3 20.66	0.643	22 26 25.8	0.39	8 52.3
24	5 3 5.65	0.608	22 26 17.0	0.35	8 48.1
25	5 2 51.48	0.573	22 26 9.3	0.30	8 43.9
26	5 2 38.16	0.538	22 26 2.6	0.26	8 39.8
27	5 2 25.68	0.503	22 25 57.1	0.22	8 35.7
28	5 2 14.05	0.467	22 25 52.7	0.17	8 31.6
29	5 2 3.28	0.431	22 25 49.4	0.12	8 27.5
30	5 1 53.37	0.395	22 25 47.2	0.07	8 23.4
31	5 1 44.32	0.359	22 25 46.1	−0.02	8 19.3
32	5 1 36.14	−0.323	+22 25 46.2	+0.03	8 15.2

Day of the Month,	1st.	11th.	21st.	31st.
Semidiameter	22″.5	22″.1	21″.6	21″.0
Horizontal Parallax	2.1	2.1	2.0	2.0

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	5 1 36.14	−0.323	+22 25 46.2	+0.03	8 15.2
2	5 1 28.83	0.287	22 25 47.6	0.08	8 11.1
3	5 1 22.39	0.250	22 25 50.2	0.13	8 7.1
4	5 1 16.81	0.214	22 25 53.9	0.18	8 3.1
5	5 1 12.10	0.178	22 25 58.8	0.23	7 59.1
6	5 1 8.26	0.142	22 26 4.9	0.28	7 55.1
7	5 1 5.29	0.106	22 26 12.1	0.33	7 51.1
8	5 1 3.19	0.069	22 26 20.5	0.38	7 47.1
9	5 1 1.96	−0.033	22 26 30.1	0.43	7 43.2
10	5 1 1.61	+0.004	22 26 40.9	0.48	7 39.3
11	5 1 2.13	0.040	22 26 52.9	0.53	7 35.4
12	5 1 3.53	0.076	22 27 6.0	0.58	7 31.5
13	5 1 5.79	0.112	22 27 20.3	0.63	7 27.6
14	5 1 8.92	0.148	22 27 35.8	0.67	7 23.7
15	5 1 12.91	0.184	22 27 52.4	0.72	7 19.8
16	5 1 17.77	0.220	22 28 10.2	0.77	7 16.0
17	5 1 23.49	0.256	22 28 29.2	0.82	7 12.2
18	5 1 30.06	0.292	22 28 49.4	0.87	7 8.4
19	5 1 37.48	0.327	22 29 10.7	0.92	7 4.6
20	5 1 45.76	0.363	22 29 33.0	0.97	7 0.8
21	5 1 54.88	0.398	22 29 56.4	1.01	6 57.0
22	5 2 4.85	0.433	22 30 21.0	1.05	6 53.2
23	5 2 15.65	0.467	22 30 46.6	1.09	6 49.4
24	5 2 27.28	0.502	22 31 13.3	1.13	6 45.7
25	5 2 39.74	0.536	22 31 41.0	1.17	6 42.0
26	5 2 53.02	0.570	22 32 9.7	1.21	6 38.3
27	5 3 7.12	0.604	22 32 39.3	1.25	6 34.6
28	5 3 22.02	0.638	22 33 9.9	1.30	6 30.9
29	5 3 37.72	0.671	22 33 41.5	1.34	6 27.2
30	5 3 54.20	0.704	22 34 14.0	1.38	6 23.5
31	5 4 11.47	0.736	22 34 47.4	1.41	6 19.9
32	5 4 29.52	+0.768	+22 35 21.6	+1.44	6 16.3

Day of the Month,	1st.	11th.	21st.	31st.
Semidiameter	20″.9	20″.3	19″.6	19″.0
Horizontal Parallax	2.0	1.9	1.8	1.8

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	5 3 37.72	+0.671	+22 33 41.6	+1.34	6 27.2
2	5 3 54.20	0.704	22 34 14.0	1.38	6 23.5
3	5 4 11.47	0.736	22 34 47.4	1.41	6 19.9
4	5 4 29.52	0.768	22 35 21.6	1.44	6 16.3
5	5 4 48.33	0.800	22 35 56.6	1.47	6 12.7
6	5 5 7.90	0.831	22 36 32.3	1.51	6 9.1
7	5 5 28.22	0.862	22 37 8.8	1.54	6 5.5
8	5 5 49.29	0.893	22 37 46.0	1.57	6 1.9
9	5 6 11.10	0.924	22 38 24.0	1.60	5 58.3
10	5 6 33.64	0.954	22 39 2.7	1.63	5 54.8
11	5 6 56.91	0.984	22 39 42.1	1.66	5 51.3
12	5 7 20.90	1.014	22 40 22.0	1.68	5 47.8
13	5 7 45.60	1.044	22 41 2.6	1.70	5 44.3
14	5 8 11.01	1.073	22 41 43.7	1.72	5 40.8
15	5 8 37.11	1.102	22 42 25.4	1.74	5 37.3
16	5 9 3.90	1.131	22 43 7.6	1.76	5 33.8
17	5 9 31.38	1.160	22 43 50.2	1.78	5 30.3
18	5 9 59.54	1.188	22 44 33.2	1.80	5 26.8
19	5 10 28.38	1.216	22 45 16.7	1.82	5 23.3
20	5 10 57.88	1.243	22 46 0.6	1.84	5 19.9
21	5 11 28.03	1.270	22 46 44.8	1.85	5 16.5
22	5 11 58.83	1.297	22 47 29.4	1.87	5 13.1
23	5 12 30.27	1.323	22 48 14.3	1.88	5 9.7
24	5 13 2.34	1.349	22 48 59.4	1.89	5 6.3
25	5 13 35.03	1.375	22 49 44.8	1.90	5 2.9
26	5 14 8.33	1.400	22 50 30.4	1.90	4 59.5
27	5 14 42.24	1.425	22 51 16.0	1.91	4 56.1
28	5 15 16.74	1.450	22 52 1.8	1.91	4 52.7
29	5 15 51.82	1.474	22 52 47.7	1.92	4 49.3
30	5 16 27.48	1.498	22 53 33.7	1.92	4 46.0
31	5 17 3.70	1.521	22 54 19.7	1.92	4 42.7
32	5 17 40.49	+1.544	+22 55 5.7	+1.92	4 39.4

Day of the Month,	1st.	11th.	21st.	31st.
Semidiameter	19″.1	18″.5	17″.9	17″.4
Horizontal Parallax	1.8	1.7	1.7	1.6

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	5 17 40.49	+1.544	+22 55 5.7	+1.92	4 39.4
2	5 18 17.83	1.567	22 55 51.6	1.91	4 36.1
3	5 18 55.71	1.589	22 56 37.4	1.91	4 32.8
4	5 19 34.13	1.611	22 57 23.1	1.90	4 29.5
5	5 20 13.07	1.633	22 58 8.6	1.90	4 26.2
6	5 20 52.53	1.65[illegible]	22 58 53.9	1.89	4 22.9
7	5 21 32.50	1.676	22 59 39.1	1.88	4 19.6
8	5 22 12.98	1.697	23 0 24.0	1.87	4 16.3
9	5 22 53.96	1.718	23 1 8.7	1.86	4 13.0
10	5 23 35.43	1.738	23 1 53.0	1.85	4 9.8
11	5 24 17.38	1.758	23 2 37.0	1.83	4 6.6
12	5 24 59.81	1.778	23 3 20.7	1.81	4 3.4
13	5 25 42.71	1.797	23 4 4.0	1.80	4 0.2
14	5 26 26.07	1.816	23 4 46.9	1.78	3 57.0
15	5 27 9.89	1.835	23 5 29.3	1.76	3 53.8
16	5 27 54.16	1.854	23 6 11.3	1.74	3 50.6
17	5 28 38.88	1.872	23 6 52.8	1.72	3 47.4
18	5 29 24.03	1.890	23 7 33.8	1.70	3 44.2
19	5 30 9.61	1.908	23 8 14.3	1.68	3 41.0
20	5 30 55.61	1.925	23 8 54.2	1.65	3 37.9
21	5 31 42.02	1.942	23 9 33.4	1.63	3 34.8
22	5 32 28.83	1.959	23 10 12.0	1.60	3 31.6
23	5 33 16.03	1.975	23 10 50.0	1.57	3 28.5
24	5 34 3.63	1.991	23 11 27.2	1.54	3 25.3
25	5 34 51.61	2.007	23 12 3.7	1.51	3 22.2
26	5 35 39.97	2.022	23 12 39.5	1.48	3 19.1
27	5 36 28.69	2.037	23 13 14.6	1.45	3 15.9
28	5 37 17.76	2.052	23 13 48.9	1.41	3 12.8
29	5 38 7.17	2.066	23 14 22.3	1.38	3 9.7
30	5 38 56.93	2.080	23 14 54.9	1.34	3 6.6
31	5 39 47.02	2.094	23 15 26.6	1.30	3 3.5
32	5 40 37.44	+2.108	+23 15 57.4	+1.27	3 0.4

Day of the Month,	1st.	11th.	21st.	31st.
Semidiameter	17″.4	16″.9	16″.5	16″.2
Horizontal Parallax	1.6	1.6	1.6	1.5

JUPITER, 1871.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	5 39 47.02	+2.094	+23 15 26.6	+1.30	3 3.5	1	6 7 52.02	+2.394	+23 22 55.9	−0.20	1 29.6
2	5 40 37.44	2.108	23 15 57.4	1.27	3 0.4	2	6 8 49.53	2.399	23 22 50.5	0.26	1 26.6
3	5 41 28.18	2.121	23 16 27.3	1.23	2 57.3	3	6 9 47.18	2.405	23 22 43.7	0.31	1 23.6
4	5 42 19.23	2.134	23 16 56.2	1.19	2 54.2	4	6 10 44.96	2.410	23 22 35.5	0.36	1 20.7
5	5 43 10.59	2.147	23 17 24.2	1.15	2 51.1	5	6 11 42.85	2.415	23 23 25.9	0.42	1 17.7
6	5 44 2.26	2.159	23 17 51.2	1.11	2 48.1	6	6 12 40.85	2.419	23 22 15.0	0.48	1 14.7
7	5 44 54.23	2.171	23 18 17.2	1.07	2 45.0	7	6 13 38.96	2.424	23 22 2.7	0.54	1 11.7
8	5 45 46.48	2.183	23 18 42.2	1.03	2 42.0	8	6 14 37.18	2.428	23 21 49.0	0.60	1 8.8
9	5 46 39.02	2.195	23 19 6.2	0.98	2 38.9	9	6 15 35.51	2.433	23 21 33.9	0.66	1 5.8
10	5 47 31.84	2.207	23 19 29.2	0.94	2 35.8	10	6 16 33.94	2.437	23 21 17.4	0.72	1 2.9
11	5 48 24.93	2.218	23 19 51.1	0.90	2 32.8	11	6 17 32.47	2.441	23 20 59.5	0.78	0 59.9
12	5 49 18.29	2.229	23 20 11.9	0.85	2 29.8	12	6 18 31.08	2.444	23 20 40.2	0.84	0 56.9
13	5 50 11.92	2.240	23 20 31.6	0.80	2 26.7	13	6 19 29.77	2.447	23 20 19.5	0.90	0 54.0
14	5 51 5.80	2.251	23 20 50.1	0.76	2 23.7	14	6 20 28.53	2.450	23 19 57.3	0.96	0 51.0
15	5 51 59.93	2.261	23 21 7.5	0.71	2 20.6	15	6 21 27.37	2.453	23 19 33.7	1.01	0 48.1
16	5 52 54.30	2.271	23 21 23.8	0.66	2 17.6	16	6 22 26.28	2.456	23 19 8.7	1.07	0 45.1
17	5 53 48.91	2.281	23 21 38.9	0.61	2 14.6	17	6 23 25.24	2.458	23 18 42.3	1.13	0 42.1
18	5 54 43.75	2.290	23 21 52.9	0.56	2 11.6	18	6 24 24.25	2.460	23 18 14.5	1.19	0 39.2
19	5 55 38.82	2.299	23 22 5.6	0.51	2 8.5	19	6 25 23.30	2.462	23 17 45.2	1.25	0 36.2
20	5 56 34.11	2.308	23 22 17.2	0.46	2 5.5	20	6 26 22.39	2.463	23 17 14.5	1.31	0 33.3
21	5 57 29.61	2.317	23 22 27.5	0.40	2 2.5	21	6 27 21.52	2.464	23 16 42.4	1.37	0 30.3
22	5 58 25.31	2.325	23 22 36.5	0.35	1 59.5	22	6 28 20.68	2.465	23 16 8.8	1.43	0 27.4
23	5 59 21.20	2.333	23 22 44.2	0.30	1 56.5	23	6 29 19.86	2.466	23 15 33.9	1.48	0 24.4
24	6 0 17.28	2.341	23 22 50.7	0.25	1 53.5	24	6 30 19.05	2.466	23 14 57.5	1.54	0 21.5
25	6 1 13.54	2.348	23 22 56.0	0.19	1 50.5	25	6 31 18.25	2.467	23 14 19.7	1.60	0 18.5
26	6 2 9.98	2.356	23 23 0.0	0.14	1 47.5	26	6 32 17.46	2.467	23 13 40.5	1.66	0 15.6
27	6 3 6.60	2.363	23 23 2.7	0.09	1 44.5	27	6 33 16.67	2.467	23 13 0.0	1.72	0 12.6
28	6 4 3.38	2.370	23 23 4.1	+0.03	1 41.5	28	6 34 15.87	2.467	23 12 18.1	1.78	0 9.7
29	6 5 0.31	2.376	23 23 4.0	−0.03	1 38.5	29	6 35 15.07	2.466	23 11 34.8	1.84	0 6.7
30	6 5 57.40	2.382	23 23 2.6	0.08	1 35.6	30	6 36 14.25	2.465	23 10 50.0	1.90	0 3.8
31	6 6 54.64	2.388	23 22 59.9	0.14	1 32.6	31	6 37 13.41	2.464	23 10 3.8	1.95	0 0.9 23 57.9
32	6 7 52.02	+2.394	+23 22 55.9	−0.20	1 29.6	32	6 38 12.54	+2.463	+23 9 16.3	−2.01	23 54.9

Day of the Month,	1st.	11th.	21st.	31st.
Semidiameter	16″.2	15″.9	15″.7	15″.5
Horizontal Parallax	1.5	1.5	1.5	1.5

Day of the Month,	1st.	11th.	21st.	31st.
Semidiameter	15″.5	15″.3	15″.2	15″.2
Horizontal Parallax	1.5	1.4	1.4	1.4

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	6 37 13.41	+2.464	+23 10 3.8	−1.95	0 0.9 23 57.9
2	6 38 12.54	2.463	23 9 16.3	2.01	23 54.9
3	6 39 11.65	2.462	23 8 27.4	2.07	23 52.0
4	6 40 10.73	2.461	23 7 37.2	2.13	23 49.0
5	6 41 9.77	2.459	23 6 45.7	2.18	23 46.1
6	6 42 8.77	2.457	23 5 52.8	2.24	23 43.1
7	6 43 7.72	2.455	23 4 58.6	2.30	23 40.1
8	6 44 6.63	2.453	23 4 3.0	2.35	23 37.2
9	6 45 5.49	2.451	23 3 6.1	2.40	23 34.2
10	6 46 4.28	2.448	23 2 7.9	2.46	23 31.3
11	6 47 3.00	2.445	23 1 8.4	2.51	23 28.3
12	6 48 1.65	2.442	23 0 7.6	2.56	23 25.3
13	6 49 0.23	2.439	22 59 5.6	2.61	23 22.4
14	6 49 58.73	2.436	22 58 2.3	2.67	23 19.4
15	6 50 57.14	2.432	22 56 57.8	2.72	23 16.5
16	6 51 55.45	2.428	22 55 52.0	2.77	23 13.5
17	6 52 53.66	2.424	22 54 45.0	2.82	23 10.5
18	6 53 51.76	2.419	22 53 36.8	2.87	23 7.6
19	6 54 49.76	2.414	22 52 27.5	2.92	23 4.6
20	6 55 47.64	2.409	22 51 17.0	2.97	23 1.7
21	6 56 45.39	2.404	22 50 5.3	3.01	22 58.7
22	6 57 43.01	2.398	22 48 52.4	3.06	22 55.7
23	6 58 40.50	2.392	22 47 38.4	3.11	22 52.7
24	6 59 37.84	2.386	22 46 23.3	3.15	22 49.7
25	7 0 35.04	2.380	22 45 7.1	3.19	22 46.7
26	7 1 32.09	2.374	22 43 49.9	3.24	22 43.7
27	7 2 28.99	2.368	22 42 31.6	3.29	22 40.7
28	7 3 25.73	2.361	22 41 12.3	3.33	22 37.8
29	7 4 22.30	2.354	22 39 52.0	3.37	22 34.8
30	7 5 18.71	2.347	22 38 30.7	3.41	22 31.8
31	7 6 14.94	2.340	22 37 8.4	3.45	22 28.8
32	7 7 10.99	+2.332	+22 35 45.2	−3.49	22 25.8

Day of the Month,	1st.	11th.	21st.	31st.
Semidiameter	15″.2	15″.2	15″.3	15″.4
Horizontal Parallax	1.4	1.4	1.4	1.5

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	7 7 10.99	+2.332	+22 35 45.2	−3.49	22 25.8
2	7 8 6.85	2.324	22 34 21.1	3.52	22 22.8
3	7 9 2.53	2.316	22 32 56.1	3.56	22 19.8
4	7 9 58.02	2.308	22 31 30.2	3.60	22 16.7
5	7 10 53.31	2.300	22 30 3.4	3.64	22 13.7
6	7 11 48.40	2.292	22 28 35.8	3.67	22 10.7
7	7 12 43.29	2.283	22 27 7.4	3.71	22 7.7
8	7 13 37.96	2.274	22 25 38.1	3.74	22 4.6
9	7 14 32.41	2.264	22 24 8.1	3.77	22 1.6
10	7 15 26.63	2.255	22 22 37.4	3.80	21 58.5
11	7 16 20.62	2.245	22 21 5.9	3.84	21 55.5
12	7 17 14.37	2.235	22 19 33.7	3.87	21 52.5
13	7 18 7.87	2.224	22 18 0.9	3.89	21 49.4
14	7 19 1.12	2.214	22 16 27.4	3.91	21 46.4
15	7 19 54.11	2.203	22 14 53.3	3.94	21 43.3
16	7 20 46.85	2.192	22 13 18.6	3.96	21 40.3
17	7 21 39.32	2.181	22 11 43.3	3.98	21 37.2
18	7 22 31.52	2.169	22 10 7.6	4.00	21 34.2
19	7 23 23.43	2.157	22 8 31.4	4.02	21 31.1
20	7 24 15.05	2.145	22 6 54.7	4.04	21 28.0
21	7 25 6.37	2.132	22 5 17.6	4.06	21 24.9
22	7 25 57.39	2.120	22 3 40.1	4.07	21 21.8
23	7 26 48.11	2.107	22 2 2.3	4.09	21 18.7
24	7 27 38.51	2.094	22 0 24.1	4.10	21 15.6
25	7 28 28.60	2.080	21 58 45.6	4.11	21 12.5
26	7 29 18.37	2.067	21 57 6.8	4.12	21 9.4
27	7 30 7.81	2.053	21 55 27.8	4.13	21 6.3
28	7 30 56.91	2.039	21 53 48.5	4.14	21 3.2
29	7 31 45.67	2.025	21 52 9.0	4.15	21 0.1
30	7 32 34.09	2.011	21 50 29.4	4.15	20 56.9
31	7 33 22.17	1.996	21 48 49.7	4.16	20 53.7
32	7 34 9.90	+1.981	+21 47 9.9	−4.16	20 50.6

Day of the Month,	1st.	11th.	21st.	31st.
Semidiameter	15″.4	15″.6	15″.8	16″.1
Horizontal Parallax	1 5	1.5	1.5	1 5

JUPITER, 1871.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	7 34 9.90	+1.981	+21 47 9.9	−4.16	20 50.6
2	7 34 57.26	1.966	21 45 30.1	4.16	20 47.5
3	7 35 44.25	1.951	21 43 50.3	4.16	20 44.4
4	7 36 30.87	1.935	21 42 10.6	4.15	20 41.2
5	7 37 17.12	1.919	21 40 31.0	4.15	20 38.0
6	7 38 2.98	1.903	21 38 51.4	4.14	20 34.8
7	7 38 48.44	1.886	21 37 11.9	4.14	20 31.6
8	7 39 33.51	1.869	21 35 32.6	4.13	20 28.4
9	7 40 18.17	1.852	21 33 53.5	4.12	20 25.2
10	7 41 2.41	1.835	21 32 14.7	4.11	20 22.0
11	7 41 46.23	1.817	21 30 36.2	4.10	20 18.8
12	7 42 29.62	1.799	21 28 58.0	4.09	20 15.6
13	7 43 12.57	1.781	21 27 20.2	4.07	20 12.4
14	7 43 55.07	1.762	21 25 42.8	4.05	20 9.2
15	7 44 37.13	1.743	21 24 5.9	4.03	20 5.9
16	7 45 18.73	1.724	21 22 29.5	4.01	20 2.6
17	7 45 59.86	1.704	21 20 53.6	3.98	19 59.4
18	7 46 40.51	1.684	21 19 18.3	3.96	19 56.2
19	7 47 20.68	1.664	21 17 43.6	3.93	19 52.9
20	7 48 0.37	1.644	21 16 9.5	3.90	19 49.6
21	7 48 39.57	1.623	21 14 36.1	3.87	19 46.3
22	7 49 18.27	1.602	21 13 3.5	3.84	19 43.0
23	7 49 56.46	1.581	21 11 31.6	3.81	19 39.7
24	7 50 34.14	1.559	21 10 0.6	3.78	19 36.4
25	7 51 11.30	1.538	21 8 30.5	3.74	19 33.1
26	7 51 47.94	1.516	21 7 1.3	3.70	19 29.7
27	7 52 24.05	1.494	21 5 33.1	3.66	19 26.4
28	7 52 59.62	1.471	21 4 5.9	3.62	19 23.1
29	7 53 34.65	1.448	21 2 39.7	3.57	19 19.7
30	7 54 9.13	1.425	21 1 14.5	3.53	19 16.3
31	7 54 43.05	1.402	20 59 50.4	3.48	19 12.9
32	7 55 16.41	+1.378	+20 58 27.5	−3.43	19 9.5

OCTOBER

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	7 54 43.05	+1.402	+20 59 50.4	−3.48	19 12.9
2	7 55 16.41	1.378	20 58 27.5	3.43	19 9.5
3	7 55 49.20	1.354	20 57 5.8	3.38	19 6.1
4	7 56 21.40	1.330	20 55 45.3	3.33	19 2.7
5	7 56 53.02	1.305	20 54 26.1	3.28	18 59.3
6	7 57 24.05	1.280	20 53 8.2	3.22	18 55.9
7	7 57 54.48	1.255	20 51 51.7	3.16	18 52.5
8	7 58 24.29	1.229	20 50 36.7	3.10	18 49.1
9	7 58 53.48	1.203	20 49 23.1	3.04	18 45.6
10	7 59 22.05	1.177	20 48 11.0	2.98	18 42.1
11	7 59 49.98	1.151	20 47 0.4	2.91	18 38.6
12	8 0 17.27	1.124	20 45 51.3	2.84	18 35.1
13	8 0 43.91	1.097	20 44 43.9	2.77	18 31.6
14	8 1 9.89	1.069	20 43 38.2	2.70	18 28.1
15	8 1 35.20	1.041	20 42 34.1	2.63	18 24.6
16	8 1 59.84	1.013	20 41 31.8	2.56	18 21.0
17	8 2 23.80	0.984	20 40 31.4	2.49	18 17.5
18	8 2 47.07	0.955	20 39 32.8	2.41	18 14.0
19	8 3 9.65	0.926	20 38 36.0	2.33	18 10.4
20	8 3 31.52	0.897	20 37 41.2	2.25	18 6.8
21	8 3 52.69	0.868	20 36 48.3	2.17	18 3.2
22	8 4 13.15	0.838	20 35 57.4	2.09	17 59.6
23	8 4 32.90	0.808	20 35 8.5	2.00	17 56.0
24	8 4 51.93	0.778	20 34 21.7	1.92	17 52.4
25	8 5 10.23	0.748	20 33 37.0	1.83	17 48.8
26	8 5 27.80	0.717	20 32 54.3	1.74	17 45.1
27	8 5 44.63	0.686	20 32 13.7	1.65	17 41.5
28	8 6 0.72	0.655	20 31 35.2	1.56	17 37.8
29	8 6 16.06	0.624	20 30 59.0	1.46	17 34.1
30	8 6 30.65	0.592	20 30 25.0	1.37	17 30.4
31	8 6 44.48	0.560	20 29 53.3	1.27	17 26.7
32	8 6 57.54	+0.528	+20 29 23.9	−1.18	17 22.9

Day of the Month,	1st.	11th.	21st.	31st.
Semidiameter	16″.2	16″.5	16″.9	17″.3
Horizontal Parallax	1.5	1.6	1.6	1.6

Day of the Month,	1st.	11th.	21st.	31st.
Semidiameter	17″.3	17″.8	18″.3	18″.9
Horizontal Parallax	1.6	1.7	1.7	1.8

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	8 6 57.54	+0.528	+20 29 23.9	−1.18	17 22.9
2	8 7 9.83	0.496	20 28 56.9	1.08	17 19.2
3	8 7 21.34	0.463	20 28 32.2	0.98	17 15.5
4	8 7 32.06	0.430	20 28 9.9	0.88	17 11.7
5	8 7 41.99	0.397	20 27 49.9	0.78	17 7.9
6	8 7 51.13	0.364	20 27 32.3	0.68	17 4.1
7	8 7 59.46	0.330	20 27 17.3	0.58	17 0.3
8	8 8 6.98	0.296	20 27 4.7	0.47	16 56.5
9	8 8 13.68	0.262	20 26 54.6	0.37	16 52.7
10	8 8 19.57	0.228	20 26 47.0	0.26	16 48.9
11	8 8 24.65	0.194	20 26 42.0	0.16	16 45.0
12	8 8 28.90	0.160	20 26 39.5	−0.05	16 41.1
13	8 8 32.32	0.125	20 26 39.5	+0.06	16 37.2
14	8 8 34.91	0.091	20 26 42.0	0.16	16 33.3
15	8 8 36.67	0.056	20 26 47.1	0.27	16 29.4
16	8 8 37.60	+0.022	20 26 54.7	0.37	16 25.5
17	8 8 37.70	−0.013	20 27 4.9	0.48	16 21.6
18	8 8 36.97	0.048	20 27 17.7	0.58	16 17.7
19	8 8 35.41	0.082	20 27 33.1	0.69	16 13.7
20	8 8 33.02	0.117	20 27 51.1	0.80	16 9.7
21	8 8 29.79	0.151	20 28 11.6	0.90	16 5.7
22	8 8 25.74	0.186	20 28 34.6	1.01	16 1.7
23	8 8 20.87	0.220	20 29 0.2	1.12	15 57.6
24	8 8 15.17	0.255	20 29 28.4	1.23	15 53.6
25	8 8 8.64	0.289	20 29 59.2	1.34	15 49.5
26	8 8 1.28	0.324	20 30 32.5	1.44	15 45.5
27	8 7 53.11	0.358	20 31 8.3	1.54	15 41.4
28	8 7 44.12	0.392	20 31 46.5	1.64	15 37.3
29	8 7 34.31	0.426	20 32 27.1	1.74	15 33.2
30	8 7 23.69	0.460	20 33 10.1	1.84	15 29.1
31	8 7 12.27	0.493	20 33 55.5	1.93	15 24.9
32	8 7 0.04	−0.527	+20 34 43.3	+2.03	15 20.8

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Semidiameter	19.0	19.6	20.2	20.7
Horizontal Parallax	1.8	1.8	1.9	1.9

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	8 7 12.27	−0.493	+20 33 55.5	+ 1.93	15 24.9
2	8 7 0.04	0.527	20 34 43.3	2.03	15 20.8
3	8 6 47.01	0.560	20 35 33.4	2.13	15 16.7
4	8 6 33.18	0.593	20 36 25.7	2.23	15 12.5
5	8 6 18.56	0.625	20 37 20.3	2.33	15 8.3
6	8 6 3.16	0.658	20 38 17.2	2.42	15 4.1
7	8 5 46.98	0.690	20 39 16.3	2.51	14 59.9
8	8 5 30.04	0.722	20 40 17.6	2.60	14 55.7
9	8 5 12.34	0.753	20 41 21.0	2.69	14 51.5
10	8 4 53.89	0.784	20 42 26.6	2.78	14 47.2
11	8 4 34.70	0.815	20 43 34.2	2.86	14 42.9
12	8 4 14.78	0.845	20 44 43.7	2.94	14 38.6
13	8 3 54.14	0.875	20 45 55.2	3.02	14 34.3
14	8 3 32.80	0.904	20 47 8.5	3.10	14 30.0
15	8 3 10.77	0.933	20 48 23.6	3.17	14 25.7
16	8 2 48.07	0.959	20 49 40.5	3.24	14 21.4
17	8 2 24.72	0.986	20 50 59.1	3.31	14 17.1
18	8 2 0.72	1.013	20 52 19.4	3.38	14 12.8
19	8 1 36.09	1.039	20 53 41.2	3.44	14 8.5
20	8 1 10.85	1.064	20 55 4.4	3.50	14 4.1
21	8 0 45.01	1.089	20 56 29.0	3.56	13 59.7
22	8 0 18.59	1.113	20 57 54.9	3.61	13 55.4
23	7 59 51.61	1.136	20 59 22.1	3.66	13 51.0
24	7 59 24.08	1.158	21 0 50.5	3.71	13 46.6
25	7 58 56.03	1.180	21 2 20.0	3.75	13 42.2
26	7 58 27.47	1.201	21 3 50.6	3.79	13 37.8
27	7 57 58.43	1.221	21 5 22.1	3.83	13 33.4
28	7 57 28.92	1.239	21 6 54.5	3.87	13 29.0
29	7 56 58.97	1.257	21 8 27.7	3.90	13 24.6
30	7 56 28.59	1.274	21 10 1.8	3.93	13 20.1
31	7 55 57.80	1.291	21 11 36.6	3.96	13 15.6
32	7 55 26.61	−1.307	+21 13 11.9	+3.99	13 11.2

Day of the Month,	st.	11th.	21st.	31st.
	″	″	″	″
Semidiameter	20.7	21.2	21.6	21.9
Horizontal Parallax	1.9	2.0	2.0	2.1

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	18 8 56.13	+1.271	−22 36 49.7	+0.13	23 22.8
2	18 9 26.61	1.269	22 36 46.3	0.15	23 19.4
3	18 9 57.04	1.267	22 36 42.5	0.17	23 16.0
4	18 10 27.41	1.264	22 36 38.3	0.19	23 12.5
5	18 10 57.72	1.261	22 36 33.6	0.21	23 9.1
6	18 11 27.95	1.258	22 36 28.4	0.23	23 5.7
7	18 11 58.10	1.255	22 36 22.8	0.24	23 2.2
8	18 12 28.17	1.251	22 36 16.8	0.26	22 58.8
9	18 12 58.16	1.248	22 36 10.4	0.27	22 55.4
10	18 13 28.07	1.245	22 36 3.7	0.29	22 51.9
11	18 13 57.90	1.241	22 35 56.6	0.30	22 48.5
12	18 14 27.63	1.237	22 35 49.1	0.32	22 45.0
13	18 14 57.26	1.232	22 35 41.2	0.34	22 41.6
14	18 15 26.78	1.227	22 35 32.9	0.35	22 38.1
15	18 15 56.18	1.222	22 35 24.3	0.37	22 34.7
16	18 16 25.46	1.217	22 35 15.3	0.38	22 31.2
17	18 16 54.62	1.212	22 35 6.0	0.40	22 27.8
18	18 17 23.65	1.207	22 34 56.3	0.41	22 24.3
19	18 17 52.55	1.201	22 34 46.3	0.43	22 20.9
20	18 18 21.31	1.195	22 34 35.9	0.44	22 17.4
21	18 18 49.93	1.189	22 34 25.2	0.45	22 14.0
22	18 19 18.40	1.183	22 34 14.1	0.47	22 10.5
23	18 19 46.71	1.176	22 34 2.7	0.48	22 7.1
24	18 20 14.86	1.170	22 33 51.1	0.49	22 3.6
25	18 20 42.85	1.163	22 33 39.2	0.50	22 0.1
26	18 21 10.67	1.155	22 33 27.0	0.51	21 56.6
27	18 21 38.31	1.148	22 33 14.5	0.53	21 53.2
28	18 22 5.77	1.140	22 33 1.8	0.54	21 49.7
29	18 22 33.05	1.133	22 32 48.8	0.55	21 46.2
30	18 23 0.14	1.125	22 32 35.6	0.56	21 42.7
31	18 23 27.03	1.116	22 32 22.1	0.57	21 39.2
32	18 23 53.72	+1.108	−22 32 8.3	+0.58	21 35.7

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	7.1	7.1	7.2	7.2
Horizontal Parallax	0.8	0.8	0.8	0.8

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	18 23 53.72	+1.108	−22 32 8.3	+0.58	21 35.7
2	18 24 20.21	1.100	22 31 54.3	0.59	21 32.2
3	18 24 46.50	1.091	22 31 40.1	0.60	21 28.7
4	18 25 12.57	1.082	22 31 25.7	0.60	21 25.2
5	18 25 38.42	1.073	22 31 11.2	0.61	21 21.7
6	18 26 4.05	1.063	22 30 56.5	0.62	21 18.2
7	18 26 29.46	1.054	22 30 41.6	0.62	21 14.7
8	18 26 54.64	1.044	22 30 26.5	0.63	21 11.2
9	18 27 19.59	1.035	22 30 11.3	0.64	21 7.7
10	18 27 44.30	1.025	22 29 55.9	0.64	21 4.1
11	18 28 8.77	1.015	22 29 40.4	0.65	21 0.6
12	18 28 33.00	1.004	22 29 24.8	0.65	20 57.1
13	18 28 56.97	0.993	22 29 9.1	0.66	20 53.5
14	18 29 20.68	0.983	22 28 53.3	0.66	20 50.0
15	18 29 44.13	0.972	22 28 37.4	0.66	20 46.5
16	18 30 7.32	0.961	22 28 21.5	0.66	20 42.9
17	18 30 30.24	0.949	22 28 5.5	0.67	20 39.3
18	18 30 52.88	0.937	22 27 49.5	0.67	20 35.8
19	18 31 15.23	0.925	22 27 33.4	0.67	20 32.2
20	18 31 37.30	0.914	22 27 17.3	0.67	20 28.6
21	18 31 59.08	0.901	22 27 1.2	0.67	20 25.1
22	18 32 20.57	0.889	22 26 45.1	0.67	20 21.5
23	18 32 41.76	0.876	22 26 29.0	0.67	20 17.9
24	18 33 2.64	0.864	22 26 12.9	0.67	20 14.3
25	18 33 23.21	0.851	22 25 56.8	0.67	20 10.7
26	18 33 43.47	0.838	22 25 40.8	0.67	20 7.1
27	18 34 3.41	0.824	22 25 24.8	0.66	20 3.5
28	18 34 23.03	0.811	22 25 8.9	0.66	19 59.9
29	18 34 42.34	0.797	22 24 53.1	0.66	19 56.3
30	18 35 1.32	0.784	22 24 37.4	0.65	19 52.7
31	18 35 19.98	0.771	22 24 21.7	0.65	19 49.1
32	18 35 38.31	+0.757	−22 24 6.1	+0.65	19 45.4

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	7.2	7.3	7.4	7.5
Horizontal Parallax	0.8	0.8	0.8	0.9

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	18 34 42.34	+0.797	−22 24 53.1	+0.66	19 56.3
2	18 35 1.32	0.784	22 24 37.4	0.65	19 52.7
3	18 35 19.98	0.771	22 24 21.7	0.65	19 49.1
4	18 35 38.31	0.757	22 24 6.1	0.65	19 45.4
5	18 35 56.30	0.742	22 23 50.7	0.64	19 41.8
6	18 36 13.94	0.728	22 23 35.5	0.63	19 38.1
7	18 36 31.24	0.714	22 23 20.5	0.62	19 34.5
8	18 36 48.20	0.699	22 23 5.6	0.62	19 30.8
9	18 37 4.81	0.685	22 22 50.9	0.61	19 27.2
10	18 37 21.06	0.670	22 22 36.3	0.60	19 23.5
11	18 37 36.96	0.655	22 22 21.9	0.60	19 19.8
12	18 37 52.50	0.640	22 22 7.7	0.59	19 16.1
13	18 38 7.68	0.625	22 21 53.7	0.58	19 12.5
14	18 38 22.49	0.609	22 21 39.9	0.57	19 8.8
15	18 38 36.93	0.594	22 21 26.4	0.56	19 5.1
16	18 38 51.00	0.578	22 21 13.1	0.55	19 1.4
17	18 39 4.69	0.563	22 21 0.1	0.54	18 57.7
18	18 39 18.00	0.547	22 20 47.4	0.52	18 54.0
19	18 39 30.93	0.531	22 20 35.0	0.51	18 50.2
20	18 39 43.47	0.514	22 20 22.8	0.50	18 46.4
21	18 39 55.61	0.498	22 20 10.9	0.49	18 42.7
22	18 40 7.35	0.481	22 19 59.3	0.48	18 39.0
23	18 40 18.69	0.464	22 19 48.0	0.46	18 35.2
24	18 40 29.63	0.448	22 19 37.0	0.45	18 31.5
25	18 40 40.18	0.431	22 19 26.3	0.44	18 27.7
26	18 40 50.33	0.415	22 19 16.0	0.42	18 23.9
27	18 41 0.08	0.398	22 19 6.1	0.40	18 20.2
28	18 41 9.43	0.381	22 18 56.6	0.39	18 16.4
29	18 41 18.37	0.364	22 18 47.5	0.37	18 12.6
30	18 41 26.90	0.347	22 18 38.7	0.36	18 8.8
31	18 41 35.01	0.329	22 18 30.2	0.35	18 5.0
32	18 41 42.70	+0.312	−22 18 22.1	+0.33	18 1.2

Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	7.5″	7.6″	7.7″	7.8″
Horizontal Parallax	0.9	0.9	0.9	0.9

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	18 41 42.70	+0.312	−22 18 22.1	+0.33	18 1.2
2	18 41 49.98	0.295	22 18 14.4	0.31	17 57.4
3	18 41 56.86	0.278	22 18 7.1	0.29	17 53.6
4	18 42 3.33	0.261	22 18 0.3	0.28	17 49.7
5	18 42 9.38	0.243	22 17 53.9	0.26	17 45.9
6	18 42 15.01	0.226	22 17 47.9	0.24	17 42.0
7	18 42 20.22	0.208	22 17 42.3	0.22	17 38.2
8	18 42 25.01	0.191	22 17 37.1	0.21	17 34.4
9	18 42 29.38	0.173	22 17 32.3	0.19	17 30.5
10	18 42 33.32	0.155	22 17 28.0	0.17	17 26.6
11	18 42 36.83	0.137	22 17 24.2	0.15	17 22.7
12	18 42 39.91	0.120	22 17 20.9	0.13	17 18.9
13	18 42 42.57	0.102	22 17 18.0	0.11	17 15.0
14	18 42 44.80	0.084	22 17 15.6	0.09	17 11.1
15	18 42 46.61	0.067	22 17 13.6	0.08	17 7.2
16	18 42 48.00	0.049	22 17 12.0	0.06	17 3.2
17	18 42 48.97	0.031	22 17 10.8	0.04	16 59.3
18	18 42 49.51	+0.014	22 17 10.1	+0.02	16 55.4
19	18 42 49.62	−0.004	22 17 9.9	0.00	16 51.5
20	18 42 49.30	0.022	22 17 10.2	−0.02	16 47.5
21	18 42 48.55	0.040	22 17 10.9	0.04	16 43.6
22	18 42 47.38	0.058	22 17 12.1	0.06	16 39.6
23	18 42 45.78	0.075	22 17 13.7	0.08	16 35.7
24	18 42 43.76	0.093	22 17 15.8	0.10	16 31.7
25	18 42 41.33	0.110	22 17 18.4	0.12	16 27.7
26	18 42 38.48	0.127	22 17 21.5	0.14	16 23.7
27	18 42 35.22	0.145	22 17 25.0	0.16	16 19.7
28	18 42 31.54	0.162	22 17 29.0	0.17	16 15.7
29	18 42 27.45	0.179	22 17 33.4	0.19	16 11.7
30	18 42 22.95	0.196	22 17 38.3	0.21	16 7.7
31	18 42 18.05	0.212	22 17 43.6	0.23	16 3.7
32	18 42 12.75	−0.229	−22 17 49.4	−0.25	15 59.7

Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	7.8″	8.0″	8.1″	8.2″
Horizontal Parallax	0.9	0.9	0.9	0.9

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	18 42 18.05	−0.212	−22 17 43.6	−0.23	16 3.7
2	18 42 12.75	0.229	22 17 49.4	0.25	15 59.7
3	18 42 7.05	0.246	22 17 55.6	0.27	15 55.6
4	18 42 0.95	0.263	22 18 2.3	0.29	15 51.6
5	18 41 54.45	0.279	22 18 9.4	0.30	15 47.6
6	18 41 47.56	0.295	22 18 16.9	0.32	15 43.5
7	18 41 40.28	0.311	22 18 24.9	0.34	15 39.5
8	18 41 32.61	0.327	22 18 33.4	0.36	15 35.4
9	18 41 24.56	0.343	22 18 42.2	0.38	15 31.3
10	18 41 16.13	0.359	22 18 51.4	0.39	15 27.2
11	18 41 7.33	0.375	22 19 1.0	0.41	15 23.2
12	18 40 58.15	0.390	22 19 11.0	0.43	15 19.1
13	18 40 48.60	0.406	22 19 21.4	0.44	15 15.0
14	18 40 38.68	0.421	22 19 32.2	0.46	15 10.9
15	18 40 28.40	0.436	22 19 43.4	0.47	15 6.8
16	18 40 17.77	0.450	22 19 54.9	0.49	15 2.7
17	18 40 6.80	0.464	22 20 6.7	0.50	14 58.6
18	18 39 55.48	0.479	22 20 18.9	0.51	14 54.4
19	18 39 43.82	0.493	22 20 31.4	0.53	14 50.3
20	18 39 31.82	0.507	22 20 44.3	0.55	14 46.2
21	18 39 19.49	0.521	22 20 57.6	0.56	14 42.0
22	18 39 6.83	0.534	22 21 11.2	0.57	14 37.9
23	18 38 53.86	0.547	22 21 25.1	0.58	14 33.7
24	18 38 40.59	0.559	22 21 39.2	0.59	14 29.6
25	18 38 27.02	0.571	22 21 53.6	0.61	14 25.4
26	18 38 13.16	0.584	22 22 8.3	0.62	14 21.3
27	18 37 59.01	0.595	22 22 23.3	0.63	14 17.1
28	18 37 44.58	0.607	22 22 38.6	0.64	14 12.9
29	18 37 29.87	0.619	22 22 54.2	0.65	14 8.7
30	18 37 14.89	0.630	22 23 10.0	0.66	14 4.5
31	18 36 59.65	0.640	22 23 26.0	0.67	14 0.3
32	18 36 44.16	−0.650	−22 23 42.2	−0.68	13 56.2

Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	8.″2	8.″3	8.″5	8.″6
Horizontal Parallax	0.9	0.9	1.0	1.0

JUNE.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	18 36 44.16	−0.650	−22 23 42.2	−0.68	13 56.2
2	18 36 28.43	0.660	22 23 58.6	0.69	13 52.0
3	18 36 12.46	0.670	22 24 15.2	0.70	13 47.8
4	18 35 56.27	0.679	22 24 32.0	0.70	13 43.6
5	18 35 39.85	0.689	22 24 48.9	0.71	13 39.4
6	18 35 23.21	0.698	22 25 6.0	0.72	13 35.2
7	18 35 6.36	0.706	22 25 23.3	0.72	13 31.0
8	18 34 49.31	0.714	22 25 40.7	0.73	13 26.7
9	18 34 32.07	0.722	22 25 58.2	0.73	13 22.5
10	18 34 14.65	0.729	22 26 15.9	0.74	13 18.3
11	18 33 57.06	0.736	22 26 33.7	0.74	13 14.1
12	18 33 39.30	0.743	22 26 51.6	0.75	13 9.8
13	18 33 21.38	0.750	22 27 9.6	0.75	13 5.6
14	18 33 3.31	0.756	22 27 27.6	0.75	13 1.4
15	18 32 45.10	0.762	22 27 45.7	0.76	12 57.1
16	18 32 26.75	0.767	22 28 3.9	0.76	12 52.9
17	18 32 8.27	0.772	22 28 22.2	0.76	12 48.7
18	18 31 49.69	0.776	22 28 40.5	0.76	12 44.4
19	18 31 31.02	0.780	22 28 58.8	0.76	12 40.2
20	18 31 12.27	0.783	22 29 17.1	0.76	12 35.9
21	18 30 53.44	0.786	22 29 35.5	0.77	12 31.7
22	18 30 34.53	0.789	22 29 53.9	0.77	12 27.4
23	18 30 15.56	0.792	22 30 12.3	0.76	12 23.2
24	18 29 56.53	0.794	22 30 30.6	0.76	12 19.0
25	18 29 37.46	0.795	22 30 48.9	0.76	12 14.7
26	18 29 18.35	0.797	22 31 7.2	0.76	12 10.5
27	18 28 59.22	0.797	22 31 25.4	0.76	12 6.2
28	18 28 40.08	0.797	22 31 43.6	0.76	12 2.0
29	18 28 20.95	0.797	22 32 1.8	0.76	11 57.7
30	18 28 1.83	0.796	22 32 19.9	0.75	11 53.5
31	18 27 42.73	0.795	22 32 38.0	0.75	11 49.2
32	18 27 23.65	−0.794	−22 32 56.1	−0.75	11 45.0

Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	8.″6	8.″6	8.″6	8.″6
Horizontal Parallax	1.0	1.0	1.0	1.0

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	18 27 42.73	−0.795	−22 32 38.0	−0.75	11 49.2
2	18 27 23.65	0.794	22 32 56.1	0.75	11 45.0
3	18 27 4.60	0.793	22 33 14.1	0.75	11 40.7
4	18 26 45.59	0.791	22 33 31.9	0.74	11 36.5
5	18 26 26.63	0.789	22 33 49.6	0.73	11 32.2
6	18 26 7.73	0.786	22 34 7.1	0.73	11 28.0
7	18 25 48.89	0.783	22 34 24.5	0.73	11 23.7
8	18 25 30.13	0.780	22 34 41.9	0.72	11 19.5
9	18 25 11.47	0.775	22 34 59.2	0.72	11 15.2
10	18 24 52.91	0.771	22 35 16.4	0.71	11 11.0
11	18 24 34.46	0.766	22 35 33.5	0.71	11 6.8
12	18 24 16.12	0.761	22 35 50.5	0.70	11 2.5
13	18 23 57.91	0.756	22 36 7.3	0.70	10 58.3
14	18 23 39.84	0.750	22 36 24.0	0.69	10 54.1
15	18 23 21.92	0.743	22 36 40.5	0.68	10 49.8
16	18 23 4.15	0.737	22 36 56.8	0.68	10 45.6
17	18 22 46.54	0.730	22 37 13.0	0.67	10 41.4
18	18 22 29.11	0.723	22 37 29.1	0.67	10 37.2
19	18 22 11.86	0.715	22 37 45.1	0.66	10 33.0
20	18 21 54.80	0.707	22 38 1.0	0.66	10 28.8
21	18 21 37.94	0.698	22 38 16.8	0.65	10 24.6
22	18 21 21.29	0.689	22 38 32.4	0.65	10 20.4
23	18 21 4.86	0.680	22 38 47.8	0.64	10 16.2
24	18 20 48.66	0.670	22 39 3.0	0.63	10 12.0
25	18 20 32.69	0.660	22 39 18.0	0.62	10 7.8
26	18 20 16.97	0.650	22 39 32.8	0.61	10 3.6
27	18 20 1.50	0.639	22 39 47.5	0.61	9 59.4
28	18 19 46.29	0.629	22 40 2.1	0.61	9 55.2
29	18 19 31.33	0.618	22 40 16.6	0.60	9 51.0
30	18 19 16.63	0.607	22 40 30.9	0.59	9 46.9
31	18 19 2.20	0.595	22 40 45.1	0.59	9 42.7
32	18 18 48.06	−0.583	−22 40 59.1	−0,58	9 38.5

Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	8″.6	8″.6	8″.6	8″.5
Horizontal Parallax	1.0	1.0	1.0	1.0

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	18 18 48.06	−0.583	−22 40 59.1	−0.58	9 38.5
2	18 18 34.22	0.570	22 41 12.9	0.57	9 34.4
3	18 18 20.68	0.558	22 41 26.6	0.57	9 30.2
4	18 18 7.44	0.545	22 41 40.2	0.56	9 26.0
5	18 17 54.51	0.532	22 41 53.6	0.55	9 21.9
6	18 17 41.89	0.519	22 42 6.8	0.55	9 17.8
7	18 17 29.59	0.506	22 42 19.8	0.54	9 13.6
8	18 17 17.61	0.492	22 42 32.6	0.53	9 9.5
9	18 17 5.96	0.479	22 42 45.3	0.52	9 5.4
10	18 16 54.64	0.464	22 42 57.8	0.52	9 1.3
11	18 16 43.67	0.450	22 43 10.2	0.51	8 57.2
12	18 16 33.05	0.435	22 43 22.5	0.51	8 53.1
13	18 16 22.78	0.420	22 43 34.6	0.50	8 49.0
14	18 16 12.87	0.405	22 43 46.5	0.49	8 44.9
15	18 16 3.33	0.390	22 43 58.3	0.49	8 40.8
16	18 15 54.16	0.374	22 44 9.9	0.48	8 36.7
17	18 15 45.37	0.358	22 44 21.4	0.48	8 32.6
18	18 15 36.96	0.343	22 44 32.8	0.47	8 28.5
19	18 15 28.93	0.327	22 44 44.1	0.47	8 24.5
20	18 15 21.28	0.311	22 44 55.3	0.46	8 20.4
21	18 15 14.02	0.294	22 45 6.3	0.45	8 16.4
22	18 15 7.15	0.278	22 45 17.1	0.45	8 12.3
23	18 15 0.68	0.261	22 45 27.7	0.44	8 8.3
24	18 14 54.62	0.244	22 45 38.2	0.43	8 4.2
25	18 14 48.96	0.227	22 45 48.5	0.43	8 0.2
26	18 14 43.71	0.210	22 45 58.7	0.42	7 56.2
27	18 14 38.86	0.194	22 46 8.8	0.42	7 52.2
28	18 14 34.41	0.177	22 46 18.8	0.41	7 48.2
29	18 14 30.37	0.160	22 46 28.6	0.41	7 44.2
30	18 14 26.74	0.143	22 46 38.3	0.40	7 40.2
31	18 14 23.53	0.125	22 46 47.8	0.39	7 36.2
32	18 14 20.73	−0.108	−22 46 57.2	−0.39	7 32.3

Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	8″.5	8″.4	8″.3	8″.2
Horizontal Parallax	0.9	0.9	0.9	0 9

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	18 14 20.73	−0.108	−22 46 57.2	−0.39	7 32.3
2	18 14 18.35	0.090	22 47 6.4	0.38	7 28.3
3	18 14 16.39	0.073	22 47 15.4	0.37	7 24.3
4	18 14 14.84	0.056	22 47 24.3	0.37	7 20.4
5	18 14 13.71	0.038	22 47 33.0	0.36	7 16.4
6	18 14 13.00	0.021	22 47 41.6	0.36	7 12.5
7	18 14 12.72	−0.003	22 47 50.1	0.35	7 8.6
8	18 14 12.87	+0.015	22 47 58.5	0.35	7 4.6
9	18 14 13.44	0.033	22 48 6.7	0.34	7 0.7
10	18 14 14.43	0.050	22 48 14.8	0.33	6 56.8
11	18 14 15.85	0.068	22 48 22.7	0.33	6 52.9
12	18 14 17.70	0.086	22 48 30.4	0.32	6 49.0
13	18 14 19.98	0.104	22 48 37.9	0.31	6 45.1
14	18 14 22.69	0.122	22 48 45.2	0.30	6 41.2
15	18 14 25.83	0.140	22 48 52.4	0.30	6 37.3
16	18 14 29.39	0.157	22 48 59.5	0.29	6 33.4
17	18 14 33.38	0.175	22 49 6.4	0.28	6 29.6
18	18 14 37.80	0.193	22 49 13.1	0.28	6 25.7
19	18 14 42.65	0.211	22 49 19.6	0.27	6 21.9
20	18 14 47.92	0.228	22 49 25.9	0.26	6 18.0
21	18 14 53.61	0.246	22 49 32.1	0.25	6 14.2
22	18 14 59.72	0.263	22 49 38.1	0.25	6 10.4
23	18 15 6.25	0.281	22 49 43.9	0.24	6 6.5
24	18 15 13.19	0.298	22 49 49.5	0.23	6 2.7
25	18 15 20.55	0.315	22 49 54.9	0.22	5 58.9
26	18 15 28.32	0.333	22 50 0.2	0.22	5 55.1
27	18 15 36.51	0.350	22 50 5.3	0.21	5 51.3
28	18 15 45.11	0.367	22 50 10.1	0.19	5 47.6
29	18 15 54.12	0.384	22 50 14.6	0.18	5 43.8
30	18 16 3.53	0.400	22 50 18.9	0.17	5 40.0
31	18 16 13.34	0.417	22 50 23.0	0.17	5 36.2
32	18 16 23.55	+0.434	−22 50 26.9	−0.16	5 32.5

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	8.2	8.0	7.9	7.8
Horizontal Parallax	0.9	0.9	0.9	0.9

OCTOBER

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	18 16 13.34	+0.417	−22 50 23.0	−0.17	5 36.2
2	18 16 23.55	0.434	22 50 26.9	0.16	5 32.5
3	18 16 34.17	0.451	22 50 30.5	0.15	5 28.7
4	18 16 45.19	0.467	22 50 33.9	0.14	5 25.0
5	18 16 56.60	0.484	22 50 37.0	0.13	5 21.2
6	18 17 8.40	0.500	22 50 39.9	0.12	5 17.5
7	18 17 20.59	0.516	22 50 42.6	0.11	5 13.8
8	18 17 33.16	0.532	22 50 45.1	0.10	5 10.0
9	18 17 46.12	0.548	22 50 47.4	0.09	5 6.3
10	18 17 59.47	0.564	22 50 49.4	0.08	5 2.6
11	18 18 13.21	0.580	22 50 51.1	0.06	4 58.9
12	18 18 27.33	0.596	22 50 52.5	0.05	4 55.2
13	18 18 41.83	0.612	22 50 53.5	0.04	4 51.5
14	18 18 56.70	0.627	22 50 54.2	0.02	4 47.8
15	18 19 11.94	0.643	22 50 54.6	−0.01	4 44.2
16	18 19 27.55	0.658	22 50 54.8	0.00	4 40.5
17	18 19 43.52	0.673	22 50 54.7	+0.01	4 36.8
18	18 19 59.84	0.687	22 50 54.3	0.02	4 33.2
19	18 20 16.51	0.702	22 50 53.6	0.04	4 29.5
20	18 20 33.53	0.716	22 50 52.6	0.05	4 25.9
21	18 20 50.90	0.731	22 50 51.3	0.06	4 22.2
22	18 21 8.62	0.745	22 50 49.6	0.08	4 18.6
23	18 21 26.68	0.759	22 50 47.5	0.10	4 15.0
24	18 21 45.07	0.773	22 50 45.0	0.11	4 11.3
25	18 22 3.79	0.787	22 50 42.2	0.12	4 7.7
26	18 22 22.83	0.800	22 50 39.0	0.14	4 4.1
27	18 22 42.20	0.814	22 50 35.5	0.15	4 0.5
28	18 23 1.89	0.827	22 50 31.7	0.17	3 56.9
29	18 23 21.90	0.840	22 50 27.5	0.18	3 53.3
30	18 23 42.22	0.853	22 50 22.9	0.20	3 49.7
31	18 24 2.84	0.865	22 50 17.9	0.22	3 46.1
32	18 24 23.76	+0.878	−22 50 12.5	+0.23	3 42.5

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	7.8	7.6	7.5	7.4
Horizontal Parallax	0.9	0.9	0.9	0.8

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	18 24 23.76	+0.878	−22 50 12.5	+0.23	3 42.5
2	18 24 44.98	0.890	22 50 6.7	0.25	3 38.9
3	18 25 6.49	0.902	22 50 0.5	0.27	3 35.4
4	18 25 28.29	0.914	22 49 53.9	0.28	3 31.8
5	18 25 50.38	0.926	22 49 46.9	0.30	3 28.2
6	18 26 12.76	0.938	22 49 39.5	0.32	3 24.7
7	18 26 35.42	0.950	22 49 31.7	0.34	3 21.1
8	18 26 58.37	0.962	22 49 23.4	0.35	3 17.6
9	18 27 21.60	0.973	22 49 14.7	0.37	3 14.0
10	18 27 45.09	0.984	22 49 5.6	0.39	3 10.5
11	18 28 8.83	0.994	22 48 56.1	0.41	3 6.9
12	18 28 32.82	1.005	22 48 46.1	0.42	3 3.4
13	18 28 57.06	1.015	22 48 35.7	0.44	2 59.8
14	18 29 21.55	1.025	22 48 24.8	0.46	2 56.3
15	18 29 46.28	1.036	22 48 13.5	0.48	2 52.8
16	18 30 11.26	1.046	22 48 1.7	0.50	2 49.3
17	18 30 36.48	1.056	22 47 49.4	0.52	2 45.8
18	18 31 1.94	1.065	22 47 36.6	0.54	2 42.3
19	18 31 27.62	1.074	22 47 23.4	0.56	2 38.8
20	18 31 53.51	1.083	22 47 9.7	0.58	2 35.3
21	18 32 19.61	1.092	22 46 55.5	0.60	2 31.8
22	18 32 45.91	1.100	22 46 40.8	0.62	2 28.3
23	18 33 12.41	1.108	22 46 25.7	0.64	2 24.8
24	18 33 39.11	1.117	22 46 10.1	0.66	2 21.3
25	18 34 6.01	1.125	22 45 54.0	0.68	2 17.8
26	18 34 33.10	1.133	22 45 37.4	0.70	2 14.3
27	18 35 0.38	1.140	22 45 20.3	0.72	2 10.8
28	18 35 27.84	1.148	22 45 2.8	0.74	2 7.4
29	18 35 55.48	1.155	22 44 44.8	0.76	2 3.9
30	18 36 23.28	1.162	22 44 26.3	0.78	2 0.4
31	18 36 51.24	1.168	22 44 7.3	0.80	1 57.0
32	18 37 19.36	+1.175	−22 43 47.8	+0.82	1 53.5

Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	7.″4	7.″3	7.″2	7.″2
Horizontal Parallax	0.8	0.8	0.8	0.8

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	18 36 51.24	+1.168	−22 44 7.3	+0.80	1 57.0
2	18 37 19.36	1.175	22 43 47.8	0.82	1 53.5
3	18 37 47.64	1.182	22 43 27.7	0.85	1 50.0
4	18 38 16.08	1.188	22 43 7.1	0.87	1 46.6
5	18 38 44.67	1.194	22 42 46.0	0.89	1 43.1
6	18 39 13.40	1.200	22 42 24.4	0.91	1 39.6
7	18 39 42.27	1.206	22 42 2.4	0.93	1 36.2
8	18 40 11.27	1.211	22 41 39.9	0.95	1 32.7
9	18 40 40.39	1.216	22 41 16.9	0.97	1 29.3
10	18 41 9.63	1.221	22 40 53.4	0.99	1 25.8
11	18 41 39.00	1.226	22 40 29.4	1.01	1 22.4
12	18 42 8.49	1.231	22 40 4.8	1.04	1 19.0
13	18 42 38.09	1.236	22 39 39.7	1.06	1 15.5
14	18 43 7.80	1.240	22 39 14.1	1.08	1 12.1
15	18 43 37.60	1.243	22 38 48.1	1.09	1 8.6
16	18 44 7.48	1.246	22 38 21.6	1.11	1 5.2
17	18 44 37.43	1.250	22 37 54.6	1.14	1 1.8
18	18 45 7.46	1.253	22 37 27.1	1.15	0 58.3
19	18 45 37.56	1.256	22 36 59.2	1.17	0 54.9
20	18 46 7.74	1.259	22 36 30.8	1.19	0 51.5
21	18 46 37.99	1.262	22 36 1.9	1.21	0 48.0
22	18 47 8.30	1.264	22 35 32.5	1.23	0 44.6
23	18 47 38.67	1.266	22 35 2.7	1.25	0 41.2
24	18 48 9.09	1.268	22 34 32.4	1.27	0 37.8
25	18 48 39.55	1.270	22 34 1.7	1.29	0 34.3
26	18 49 10.04	1.271	22 33 30.5	1.31	0 30.9
27	18 49 40.57	1.273	22 32 58.8	1.33	0 27.5
28	18 50 11.13	1.274	22 32 26.7	1.35	0 24.1
29	18 50 41.71	1.275	22 31 54.2	1.36	0 20.6
30	18 51 12.32	1.276	22 31 21.3	1.38	0 17.2
31	18 51 42.95	1.276	22 30 47.9	1.40	0 13.8
32	18 52 13.59	+1.277	−22 30 14.1	+1.42	0 10.4

Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	7.″2	7.″1	7.″1	7.″1
Horizontal Parallax	0.8	0.8	0.8	0.8

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.
	d					d			
Jan. 1	1	+.1825466	—.8863166	—.3845643	Mar. 1	60	+.9344948	—.3035789	—.1317213
2	2	.1997016	.8831955	.3832097	2	61	.9403723	.2886087	.1252251
3	3	.2167935	.8798006	.3817362	3	62	.9459650	.2735522	.1186916
4	4	.2338172	.8761352	.3801443	4	63	.9512717	.2584140	.1121228
5	5	.2507678	.8721946	.3784348	5	64	.9562913	.2431985	.1055205
6	6	.2676404	.8679861	.3766082	6	65	.9610227	.2279101	.0988867
7	7	.2844299	.8635087	.3746650	7	66	.9654650	.2125531	.0922233
8	8	.3011316	.8587638	.3726058	8	67	.9696170	.1971318	.0855320
9	9	.3177406	.8537527	.3704311	9	68	.9734777	.1816506	.0788148
10	10	.3342521	.8484767	.3681416	10	69	.9770460	.1661140	.0720736
11	11	.3506613	.8429373	.3657379	11	70	.9803208	.1505261	.0653105
12	12	.3669631	.8371360	.3632207	12	71	.9833013	.1348916	.0585274
13	13	.3831524	.8310743	.3605907	13	72	.9859866	.1192150	.0517262
14	14	.3992241	.8247537	.3578485	14	73	.9883757	.1035011	.0449088
15	15	.4151730	.8181759	.3549948	15	74	.9904677	.0877547	.0380773
16	16	.4309940	.8113426	.3520305	16	75	.9922619	.0719806	.0312337
17	17	.4466818	.8042559	.3489564	17	76	.9937577	.0561837	.0243802
18	18	.4622313	.7969178	.3457733	18	77	.9949546	.0403688	.0175188
19	19	.4776375	.7893305	.3424820	19	78	.9958522	.0245410	.0106515
20	20	.4928954	.7814966	.3390837	20	79	.9964502	—.0087053	—.0037806
21	21	.5079998	.7734187	.3355796	21	80	.9967485	+.0071333	+.0030918
22	22	.5229457	.7650995	.3319709	22	81	.9967472	.0229697	.0099634
23	23	.5377282	.7565419	.3282587	23	82	.9964467	.0387988	.0168318
24	24	.5523425	.7477490	.3244442	24	83	.9958475	.0546155	.0236950
25	25	.5667841	.7387241	.3205287	25	84	.9949503	.0704149	.0305508
26	26	.5810484	.7294704	.3165137	26	85	.9937558	.0861920	.0373970
27	27	.5951310	.7199911	.3124006	27	86	.9922651	.1019419	.0442314
28	28	.6090276	.7102893	.3081910	28	87	.9904792	.1176599	.0510520
29	29	.6227340	.7003685	.3038862	29	88	.9883992	.1333416	.0578569
30	30	.6362465	.6902322	.2994878	30	89	.9860262	.1489825	.0646442
31	31	.6495616	.6798840	.2949972	31	90	.9833615	.1645781	.0714118
Feb. 1	32	.6626755	.6693273	.2904160	Apr. 1	91	.9804067	.1801238	.0781577
2	33	.6755847	.6585651	.2857457	2	92	.9771630	.1956153	.0848800
3	34	.6882855	.6476007	.2809877	3	93	.9736318	.2110487	.0915767
4	35	.7007745	.6364375	.2761435	4	94	.9698145	.2264199	.0982461
5	36	.7130483	.6250791	.2712147	5	95	.9657124	.2417246	.1048865
6	37	.7251033	.6135288	.2662028	6	96	.9613269	.2569583	.1114962
7	38	.7369362	.6017900	.2611093	7	97	.9566594	.2721170	.1180733
8	39	.7485437	.5898661	.2559355	8	98	.9517114	.2871967	.1246159
9	40	.7599225	.5777605	.2506831	9	99	.9464843	.3021932	.1311222
10	41	.7710691	.5654768	.2453536	10	100	.9409795	.3171023	.1375905
11	42	.7819795	.5530185	.2399484	11	101	.9351984	.3319198	.1440190
12	43	.7926507	.5403893	.2344690	12	102	.9291426	.3466413	.1504059
13	44	.8030793	.5275926	.2289171	13	103	.9228138	.3612626	.1567493
14	45	.8132623	.5146321	.2232944	14	104	.9162137	.3757793	.1630474
15	46	.8231962	.5015118	.2176025	15	105	.9093442	.3901867	.1692983
16	47	.8328774	.4882363	.2118432	16	106	.9022074	.4044807	.1755001
17	48	.8423028	.4748101	.2060184	17	107	.8948053	.4186569	.1816508
18	49	.8514695	.4612376	.2001302	18	108	.8871402	.4327109	.1877486
19	50	.8603745	.4475229	.1941802	19	109	.8792145	.4466383	.1937918
20	51	.8690150	.4336705	.1881702	20	110	.8710310	.4604348	.1997785
21	52	.8773882	.4196850	.1821022	21	111	.8625926	.4740962	.2057067
22	53	.8854917	.4055710	.1759783	22	112	.8539022	.4876184	.2115745
23	54	.8933233	.3913333	.1698005	23	113	.8449628	.5009974	.2173802
24	55	.9008808	.3769768	.1635710	24	114	.8357773	.5142294	.2231221
25	56	.9081623	.3625063	.1572919	25	115	.8263488	.5273107	.2287985
26	57	.9151660	.3479266	.1509653	26	116	.8166809	.5402375	.2344080
27	58	.9218903	.3332423	.1445934	27	117	.8067770	.5530063	.2399489
28	59	.9283337	.3184582	.1381781	28	118	.7966404	.5656138	.2454196
29	60	+.9344948	—.3035789	—.1317213	29	119	.7862745	.5780568	.2508188
					30	120	.7756826	.5903320	.2561452
					31	121	+.7648679	+.6024363	+.2613975

Greenwich Mean Noon.		d	X.	Y.	Z.	Greenwich Mean Noon.		d	X.	Y.	Z.
May	1	121	+.7648679	+.6024363	+.2613975	July	1	182	−.1617680	+.9207974	+.3995306
	2	122	.7538339	.6143666	.2665742		2	183	.1784409	.9182060	.3984056
	3	123	.7425839	.6261201	.2716740		3	184	.1950642	.9153576	.3971691
	4	124	.7311212	.6376939	.2766955		4	185	.2116329	.9122529	.3958214
	5	125	.7194489	.6490851	.2816375		5	186	.2281427	.9088926	.3943629
	6	126	.7075704	.6602906	.2864988		6	187	.2445895	.9052774	.3927940
	7	127	.6954890	.6713075	.2912782		7	188	.2609690	.9014082	.3911149
	8	128	.6832081	.6821326	.2959746		8	189	.2772764	.8972856	.3893260
	9	129	.6707308	.6927632	.3005866		9	190	.2935072	.8929103	.3874277
	10	130	.6580602	.7031965	.3051129		10	191	.3096570	.8882832	.3854204
	11	131	.6451997	.7134294	.3095522		11	192	.3257212	.8834051	.3833043
	12	132	.6321530	.7234585	.3139032		12	193	.3416949	.8782772	.3810800
	13	133	.6189239	.7332809	.3181647		13	194	.3575736	.8729007	.3787480
	14	134	.6055161	.7428938	.3223355		14	195	.3733523	.8672763	.3763087
	15	135	.5919334	.7522942	.3264143		15	196	.3890260	.8614070	.3737626
	16	136	.5781797	.7614792	.3303997		16	197	.4045899	.8552931	.3711104
	17	137	.5642591	.7704460	.3342906		17	198	.4200396	.8489367	.3683529
	18	138	.5501758	.7791918	.3380858		18	199	.4353703	.8423396	.3654909
	19	139	.5359344	.7877139	.3417840		19	200	.4505771	.8355037	.3625253
	20	140	.5215393	.7960097	.3453842		20	201	.4656554	.8284312	.3594570
	21	141	.5069950	.8040771	.3488853		21	202	.4806908	.8211243	.3562869
	22	142	.4923061	.8119139	.3522863		22	203	.4954088	.8135853	.3530160
	23	143	.4774772	.8195178	.3555862		23	204	.5100756	.8058167	.3496453
	24	144	.4625129	.8268871	.3587842		24	205	.5245968	.7978210	.3461759
	25	145	.4474176	.8340199	.3618796		25	206	.5389684	.7896006	.3426089
	26	146	.4321958	.8409144	.3648716		26	207	.5531864	.7811581	.3389453
	27	147	.4168524	.8475693	.3677594		27	208	.5672470	.7724960	.3351863
	28	148	.4013926	.8539830	.3705423		28	209	.5811467	.7636169	.3313331
	29	149	.3858204	.8601540	.3732197		29	210	.5948818	.7545233	.3273868
	30	150	.3701404	.8660811	.3757912		30	211	.6084487	.7452178	.3233485
	31	151	.3543566	.8717630	.3782562		31	212	.6218441	.7357028	.3192195
June	1	152	.3384734	.8771986	.3806142	Aug.	1	213	.6350643	.7259808	.3150008
	2	153	.3224951	.8823866	.3828646		2	214	.6481053	.7160543	.3106934
	3	154	.3064262	.8873258	.3850071		3	215	.6609641	.7059261	.3062983
	4	155	.2902710	.8920151	.3870411		4	216	.6736370	.6955981	.3018168
	5	156	.2740336	.8964533	.3889662		5	217	.6861202	.6850720	.2972500
	6	157	.2577184	.9006392	.3907819		6	218	.6984102	.6743533	.2925990
	7	158	.2413297	.9045718	.3924875		7	219	.7105034	.6634412	.2878650
	8	159	.2248717	.9082497	.3940827		8	220	.7223962	.6523403	.2830490
	9	160	.2083486	.9116716	.3955671		9	221	.7340850	.6410532	.2781522
	10	161	.1917650	.9148364	.3969401		10	222	.7455661	.6295827	.2731758
	11	162	.1751257	.9177430	.3982012		11	223	.7568358	.6179318	.2681212
	12	163	.1584354	.9203903	.3993499		12	224	.7678902	.6061036	.2629897
	13	164	.1416990	.9227773	.4003858		13	225	.7787258	.5941012	.2577826
	14	165	.1249213	.9249029	.4013085		14	226	.7893391	.5819281	.2525013
	15	166	.1081074	.9267663	.4021175		15	227	.7997266	.5695879	.2471473
	16	167	.0912622	.9283668	.4028126		16	228	.8098848	.5570841	.2417223
	17	168	.0743907	.9297041	.4033936		17	229	.8198104	.5444205	.2362281
	18	169	.0574978	.9307778	.4038602		18	230	.8295005	.5316011	.2306662
	19	170	.0405884	.9315876	.4042123		19	231	.8389521	.5186301	.2250381
	20	171	.0236677	.9321333	.4044498		20	232	.8481624	.5055113	.2193457
	21	172	+.0067411	.9324150	.4045727		21	233	.8571286	.4922486	.2135908
	22	173	−.0101863	.9324329	.4045809		22	234	.8658483	.4788461	.2077750
	23	174	.0271095	.9321870	.4044746		23	235	.8743189	.4653077	.2018999
	24	175	.0440235	.9316778	.4042538		24	236	.8825379	.4516371	.1959672
	25	176	.0609235	.9309067	.4039189		25	237	.8905033	.4378382	.1899793
	26	177	.0778046	.9298723	.4034702		26	238	.8982132	.4239150	.1839374
	27	178	.0946623	.9285773	.4029081		27	239	.9056656	.4098714	.1778432
	28	179	.1114920	.9270215	.4022328		28	240	.9128585	.3957113	.1716986
	29	180	.1282891	.9252058	.4014446		29	241	.9197899	.3814385	.1655053
	30	181	.1450492	.9231309	.4005437		30	242	.9264583	.3670569	.1592650
	31	182	−.1617680	+.9207974	+.3995306		31	243	.9328612	.3525705	.1529793
							32	244	−.9389960	+.3379830	+.1466498

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.
	d					d			
Sept. 1	244	—.9389969	+.3379830	+.1466498	Nov. 1	305	—.7746932	—.5682998	—.2465861
2	245	.9448635	.3232981	.1402781	2	306	.7635546	.5804899	.2518748
3	246	.9504590	.3085196	.1338660	3	307	.7521842	.5925955	.2570878
4	247	.9557814	.2936513	.1274150	4	308	.7405847	.6043427	.2622235
5	248	.9608289	.2786970	.1209269	5	309	.7287592	.6159975	.2672801
6	249	.9655995	.2636609	.1144033	6	310	.7167109	.6274660	.2722560
7	250	.9700913	.2485472	.1078460	7	311	.7044431	.6387442	.2771494
8	251	.9743024	.2333692	.1012569	8	312	.6919594	.6498282	.2819587
9	252	.9782310	.2181041	.0946378	9	313	.6792632	.6607143	.2866822
10	253	.9818755	.2027832	.0879907	10	314	.6663581	.6713987	.2913185
11	254	.9852342	.1874020	.0813174	11	315	.6532479	.6818775	.2958658
12	255	.9883057	.1719653	.0746199	12	316	.6399369	.6921470	.3003223
13	256	.9910886	.1564781	.0679002	13	317	.6264291	.7022037	.3046865
14	257	.9935816	.1409449	.0611604	14	318	.6127289	.7120443	.3089570
15	258	.9957835	.1253703	.0544026	15	319	.5988407	.7216658	.3131324
16	259	.9976935	.1097593	.0476289	16	320	.5847691	.7310649	.3172112
17	260	0.9993109	.0941169	.0408412	17	321	.5705187	.7402385	.3211922
18	261	1.0006352	.0784477	.0340416	18	322	.5560940	.7491837	.3250741
19	262	1.0016660	.0627566	.0272325	19	323	.5414997	.7578978	.3288557
20	263	1.0024030	.0470484	.0204160	20	324	.5267404	.7663786	.3325358
21	264	1.0028461	.0313279	.0135942	21	325	.5118208	.7746234	.3361132
22	265	1.0029953	+.0155998	+.0067690	22	326	.4967454	.7826296	.3395869
23	266	1.0028505	—.0001314	—.0000575	23	327	.4815189	.7903951	.3429561
24	267	1.0024119	.0158611	.0068833	24	328	.4661458	.7979177	.3462198
25	268	1.0016799	.0315849	.0137065	25	329	.4506306	.8051956	.3493770
26	269	1.0006548	.0472985	.0205251	26	330	.4349778	.8122260	.3524270
27	270	0.9993367	.0629976	.0273372	27	331	.4191919	.8190074	.3553689
28	271	.9977260	.0786777	.0341409	28	332	.4032774	.8255375	.3582018
29	272	.9958229	.0943347	.0409343	29	333	.3872389	.8318144	.3609247
30	273	.9936276	.1099642	.0477156	30	334	.3710809	.8378361	.3635368
Oct. 1	274	.9911406	.1255619	.0544830	Dec. 1	335	.3548079	.8436006	.3660373
2	275	.9883621	.1411232	.0612346	2	336	.3384242	.8491057	.3684254
3	276	.9852924	.1566436	.0679684	3	337	.3219346	.8543494	.3707001
4	277	.9819320	.1721190	.0746826	4	338	.3053439	.8593295	.3728607
5	278	.9782812	.1875450	.0813754	5	339	.2886572	.8640441	.3749063
6	279	.9743404	.2029169	.0880447	6	340	.2718796	.8684914	.3768361
7	280	.9701104	.2182301	.0946885	7	341	.2550161	.8726696	.3786492
8	281	.9655914	.2334798	.1013048	8	342	.2380721	.8765769	.3803449
9	282	.9607845	.2486612	.1078917	9	343	.2210529	.8802116	.3819225
10	283	.9556906	.2637694	.1144470	10	344	.2039640	.8835723	.3833813
11	284	.9503107	.2787997	.1209687	11	345	.1868109	.8866577	.3847207
12	285	.9446461	.2937472	.1274546	12	346	.1695994	.8894666	.3859401
13	286	.9386983	.3086072	.1339025	13	347	.1523351	.8919980	.3870391
14	287	.9324685	.3233748	.1403104	14	348	.1350237	.8942510	.3880174
15	288	.9259585	.3380453	.1466763	15	349	.1176709	.8962249	.3888747
16	289	.9191704	.3526138	.1529982	16	350	.1002825	.8979193	.3896105
17	290	.9121062	.3670756	.1592739	17	351	.0828642	.8993339	.3902246
18	291	.9047680	.3814259	.1655013	18	352	.0654217	.9004682	.3907169
19	292	.8971582	.3956603	.1716783	19	353	.0479606	.9013225	.3910875
20	293	.8892796	.4097744	.1778031	20	354	.0304861	.9018965	.3913363
21	294	.8811347	.4237641	.1838737	21	355	—.0130035	.9021904	.3914635
22	295	.8727258	.4376253	.1898883	22	356	+.0044817	.9022042	.3914691
23	296	.8640554	.4513538	.1958454	23	357	.0219641	.9019381	.3913532
24	297	.8551261	.4649456	.2017432	24	358	.0394385	.9013926	.3911160
25	298	.8459405	.4783968	.2075799	25	359	.0568998	.9005680	.3907576
26	299	.8365015	.4917037	.2133537	26	360	.0743428	.8994646	.3902782
27	300	.8268118	.5048625	.2190631	27	361	.0917627	.8980828	.3896780
28	301	.8168738	.5178692	.2247064	28	362	.1091544	.8964228	.3889571
29	302	.8066932	.5307199	.2302820	29	363	.1265130	.8944851	.3881158
30	303	.7962638	.5434110	.2357882	30	364	.1438334	.8922700	.3871544
31	304	.7855972	.5559389	.2412234	31	365	.1611103	.8897780	.3860731
32	305	—.7746932	—.5682998	—.2465861	32	366	+.1783385	—.8870096	—.3848719

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.		FEBRUARY.		MARCH.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	41° 28′ 36″.6	−4° 31′ 7″.8	85° 8′ 46″.5	−1° 19′ 1″.9	92° 55′ 24″.0	−0° 27′ 7″.0
1.5	47 23 25.8	4 12 39.2	91 11 41.6	0 46 34.4	98 58 57.1	+0 5 16.3
2.0	53 18 9.2	3 51 29.3	97 17 45.0	−0 13 20.0	105 6 14.4	0 37 54.1
2.5	59 13 15.2	3 27 49.5	103 27 19.4	+0 20 20.8	111 17 48.9	1 10 25.6
3.0	65 9 10.0	3 1 52.2	109 40 43.6	0 54 5.8	117 34 9.4	1 42 28.7
3.5	71 6 17.5	2 33 51.3	115 58 12.0	1 27 30.8	123 55 40.0	2 13 39.0
4.0	77 4 59.4	2 4 2.0	122 19 54.6	2 0 10.5	130 22 39.1	2 43 31.1
4.5	83 5 35.1	1 32 40.9	128 45 56.6	2 31 38.4	136 55 18.0	3 11 38.0
5.0	89 8 21.4	1 0 6.2	135 16 18.4	3 1 26.9	143 33 41.1	3 37 31.7
5.5	95 13 33.1	−0 26 37.7	141 59 55.4	3 29 8.5	150 17 44.7	4 0 44.0
6.0	101 21 22.7	+0 7 23.2	148 29 38.9	3 54 15.9	157 7 16.4	4 20 47.6
6.5	107 32 0.4	0 41 33.8	155 12 15.7	4 16 23.1	164 1 56.0	4 37 16.4
7.0	113 45 34.7	1 15 30.5	161 58 20.3	4 35 5.9	171 1 15.3	4 49 47.2
7.5	120 2 12.6	1 48 48.2	168 48 0.8	4 50 2.6	178 4 39.0	4 58 0.4
8.0	126 21 59.7	2 21 1.7	175 40 28.7	5 0 54.8	185 11 26.9	5 1 41.0
8.5	132 45 0.4	2 51 45.3	182 35 31.0	5 7 28.0	192 20 54·6	5 0 39.6
9.0	139 11 18.0	3 20 33.4	189 32 45.5	5 9 32.0	199 32 15.8	4 54 52.9
9.5	145 40 55.2	3 47 0.8	196 31 50.1	5 7 1.1	206 44 44.6	4 44 23.9
10.0	152 13 54.4	4 10 43.5	203 32 24.6	4 59 54.6	213 57 36.8	4 29 22.0
10.5	158 50 17.3	4 31 18.5	210 34 10.2	4 48 16.4	221 10 12.2	4 10 2.5
11.0	165 30 5.4	4 48 24.6	217 36 50.1	4 32 15.4	228 21 55.0	3 46 46.0
11.5	172 13 19.4	5 1 42.6	224 40 9.8	4 12 5.0	235 32 15.6	3 19 57.6
12.0	178 59 59.7	5 10 55.9	231 43 56.3	3 48 2.8	242 40 50.0	2 50 6.1
12.5	185 50 5.8	5 15 50.6	238 47 58.4	3 20 30.7	249 47 20.7	2 17 43.1
13.0	192 43 36.3	5 16 16.2	245 52 5.8	2 49 54.3	256 51 35.4	1 43 22.1
13.5	199 40 28.0	5 12 5.6	252 56 8.9	2 16 42.4	263 53 26.8	1 7 37.5
14.0	206 40 35.9	5 3 16.0	259 59 57.6	1 41 26.5	270 52 51.4	+0 31 3.8
14.5	213 43 52.3	4 49 49.0	267 3 21.0	1 4 40.5	277 49 48.6	−0 5 44.5
15.0	220 50 6.4	4 31 50.8	274 6 6.8	+0 26 59.9	284 44 19.2	0 42 13.8
15.5	227 59 3.8	4 9 33.2	281 8 1.1	−0 10 58.9	291 36 25.1	1 17 51.9
16.0	235 10 25.9	3 43 13.0	288 8 47.0	0 48 39.2	298 26 7.8	1 52 8.3
16.5	242 23 49.7	3 13 12.7	295 8 5.7	1 25 25.1	305 13 28.1	2 24 34.8
17.0	249 38 47.6	2 40 0.2	302 5 36.1	2 0 42.0	311 58 24.7	2 54 45.5
17.5	256 54 47.3	2 4 8.3	309 0 55.6	2 33 57.8	318 40 54.9	3 22 17.1
18.0	264 11 13.0	1 26 14.0	315 53 40.2	3 4 43.4	325 20 54.1	3 46 49.6
18.5	271 27 25.0	0 46 57.7	322 43 25.9	3 32 33.4	331 58 15.8	4 8 6.2
19.0	278 42 41.1	+0 7 1.8	329 29 49.1	3 57 6.7	338 32 51.9	4 25 53.5
19.5	285 56 18.2	−0 32 50.5	336 12 30.0	4 18 7.0	345 4 33.6	4 40 1.8
20.0	293 7 32.8	1 11 56.6	342 51 8.7	4 35 22.2	351 33 12.3	4 50 24.9
20.5	300 15 43.1	1 49 36.5	249 25 31.2	4 48 45.1	357 58 39.4	4 57 0.2
21.0	307 20 9.9	2 25 13.3	355 55 27.5	4 58 12.8	4 20 48.2	4 59 48.3
21.5	314 20 18.5	2 53 14.8	2 20 52.9	5 3 45.7	10 39 34.1	4 58 53.0
22.0	321 15 39.2	3 28 14.1	8 41 48.2	5 5 28.2	16 54 55.6	4 54 20.8
22.5	328 5 48.7	3 54 49.6	14 58 19.3	5 3 26.9	23 6 54.3	4 46 20.6
23.0	334 50 30.6	4 17 45.3	21 10 38.2	4 57 50.8	29 15 35.7	4 35 3.2
23.5	341 29 35.8	4 36 50.7	27 19 1.5	4 48 50.6	35 21 9.6	4 20 41.2
24.0	348 3 2.3	4 51 59.8	33 23 51.0	4 36 38.1	41 23 49.7	4 3 27.9
24.5	354 30 55.1	5 3 11.0	39 25 32.6	4 21 25.9	47 23 54.0	3 43 37.8
25.0	0 53 25.6	5 10 26.1	45 24 35.9	4 3 26.9	53 21 44.5	3 21 25.7
25.5	7 10 51.2	5 13 49.8	51 21 34.1	8 42 54.7	59 17 47.3	2 57 7.0
26.0	13 23 34.3	5 13 28.7	57 17 2.9	3 20 2.8	65 12 31.4	2 30 57.0
26.5	19 32 1.8	5 9 31.0	63 11 40.6	2 55 4.8	71 6 29.5	2 3 11.3
27.0	25 36 44.0	5 2 6.3	69 6 6.4	2 28 14.6	77 0 16.9	1 34 5.4
27.5	31 38 14.1	4 51 24.6	75 1 0.8	1 59 46.6	82 54 31.5	1 3 55.2
28.0	37 37 7.5	4 37 36.6	80 57 4.9	1 29 55.6	88 49 52.9	0 32 56.8
28.5	43 34 1.1	4 20 53.5	86 54 59.4	0 58 56.9	94 47 2.1	−0 1 26.8
29.0	49 29 32.7	4 1 26.4	92 55 24.0	−0 27 7.0	100 46 40.8	+0 30 17.6
29.5	55 24 20.2	3 39 27.2	98 58 57.1	+0 5 16.3	106 49 30.8	1 1 58.1
30.0	61 19 1.7	3 15 8.2	105 6 14.4	0 37 54.1	112 56 13.2	1 33 15.7
30.5	67 14 14.1	2 48 42.0	111 17 48.9	1 10 25.6	119 7 27.1	2 3 49.6
31.0	73 10 33.3	2 20 22.3	117 34 9.4	1 42 28.7	125 23 49.8	2 33 18.1
31.5	79 8 33.5	−1 50 23.6	123 55 40.0	+2 13 39.0	131 45 53.9	+3 1 17.5

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.		MAY.		JUNE.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	138° 14′ 7″.8	+3° 27′ 23″.2	173° 19′ 44″.1	+5° 3′ 39″.0	225° 22′ 0″.7	+3° 45′ 24″.3
1.5	144 48 53.1	3 51 9.1	180 21 51.4	5 7 7.2	232 54 19.1	3 14 30.4
2.0	151 30 24.1	4 12 8.5	187 30 56.4	5 5 53.4	240 29 22.0	2 39 58.9
2.5	158 18 45.9	4 29 54.6	194 46 30.0	4 59 45.8	248 5 57.9	2 2 28.6
3.0	165 13 52.9	4 44 1.2	202 7 51.4	4 48 37.8	255 42 52.4	1 22 44.2
3.5	172 15 29.3	4 54 4.1	209 34 8.3	4 32 30.6	263 18 51.3	+0 41 34.8
4.0	179 23 7.7	4 59 42.4	217 4 18.2	4 11 33.8	270 52 43.1	—0 0 8.7
4.5	186 36 10.1	5 0 39.5	224 37 11.6	3 46 5.3	278 23 22.0	0 41 35.7
5.0	193 53 48.0	4 56 44.4	232 11 34.5	3 16 31.8	285 49 49.5	1 21 57.9
5.5	201 15 5.4	4 47 53.2	239 46 11.4	2 43 27.1	293 11 16.8	2 0 31.6
6.0	208 39 0.3	4 34 9.3	247 19 49.0	2 7 31.6	300 27 4.6	2 36 38.4
6.5	216 4 27.4	4 15 44.0	254 51 19.1	1 29 29.6	307 36 44.5	3 9 46.3
7.0	223 30 21.6	3 52 56.1	262 19 40.2	0 50 8.1	314 39 58.3	3 39 30.0
7.5	230 55 40.1	3 26 11.7	269 44 0.5	+0 10 13.9	321 36 37.5	4 5 30.8
8.0	238 19 25.4	2 56 2.1	277 3 38.2	—0 29 27.3	328 26 42.2	4 27 35.8
8.5	245 40 47.5	2 23 3.4	284 18 1.8	1 8 13.5	335 10 20.0	4 45 37.2
9.0	252 59 4.3	1 47 54.3	291 26 50.3	1 45 26.5	341 47 44.9	4 59 32.0
9.5	260 13 43.2	1 11 15.2	298 29 52.1	2 20 33.3	348 19 15.7	5 9 20.5
10.0	267 24 20.3	+0 33 46.1	305 27 4.0	2 53 5.6	354 45 14.8	5 15 6.3
10.5	274 30 40.7	—0 3 54.1	312 18 30.0	3 22 40.6	1 6 7.4	5 16 55.2
11.0	281 32 36.8	0 41 8.6	319 4 19.6	3 49 0.2	7 22 20.3	5 14 54.9
11.5	288 30 7.7	1 17 23.3	325 44 46.7	4 11 50.5	13 34 21.5	5 9 14.5
12.0	295 23 17.3	1 52 7.2	332 20 8.2	4 31 1.8	19 42 39.0	5 0 4.3
12.5	302 12 13.2	2 24 52.9	338 50 43.1	4 46 27.7	25 47 40.6	4 47 35.7
13.0	308 57 5.7	2 55 16.0	345 16 51.4	4 58 4.9	31 49 53.7	4 32 0.6
13.5	315 38 6.3	3 22 55.8	351 38 53.4	5 5 52.7	37 49 44.5	4 13 32.0
14.0	322 15 26.9	3 47 34.8	357 57 9.1	5 9 52.5	43 47 37.9	3 52 23.4
14.5	328 49 19.2	4 8 58.4	4 11 58.0	5 10 8.2	49 43 57.9	3 28 49.2
15.0	335 19 53.7	4 26 55.5	10 23 38.6	5 6 45.0	55 39 6.7	3 3 4.6
15.5	341 47 19.8	4 41 17.7	16 32 28.3	4 59 50.3	61 33 25.6	2 35 25.4
16.0	348 11 45.4	4 51 59.3	22 38 43.2	4 49 32.8	67 27 14.5	2 6 8.2
16.5	354 33 17.0	4 58 57.7	28 42 38.5	4 36 2.7	73 20 52.3	1 35 30.6
17.0	0 51 59.9	5 2 12.7	34 44 28.4	4 19 31.5	79 14 36.9	1 3 50.4
17.5	7 7 58.4	5 1 46.9	40 44 26.5	4 0 12.1	85 8 45.8	—0 31 26.5
18.0	13 21 16.1	4 57 44.9	46 42 46.2	3 38 18.6	91 3 35.8	+0 1 21.9
18.5	19 31 56.5	4 50 14.0	52 39 40.7	3 14 5.9	96 59 23.8	0 34 15.0
19.0	25 40 3.9	4 39 23.2	58 35 23.6	2 47 50.2	102 56 26.4	1 6 52.7
19.5	31 45 43.3	4 25 23.6	64 30 9.2	2 19 48.1	108 55 0.7	1 38 54.8
20.0	37 49 1.6	4 8 27.7	70 24 12.8	1 50 17.1	114 55 24.2	2 10 0.9
20.5	43 50 7.4	3 48 49.4	76 17 50.4	1 19 35.2	120 57 55.2	2 39 50.6
21.0	49 49 11.6	3 26 43.6	82 11 19.8	0 48 0.8	127 2 52.6	3 8 3.7
21.5	55 46 28.1	3 2 26.1	88 5 0.8	—0 15 52.4	133 10 36.1	3 34 20.0
22.0	61 42 13.2	2 36 13.2	93 59 14.7	+0 16 31.1	139 21 26.3	3 58 19.9
22.5	67 36 46.3	2 8 21.9	99 54 25.1	0 48 50.8	145 35 44.3	4 19 44.0
23.0	73 30 29.9	1 39 8.9	105 50 57.2	1 20 47.6	151 53 51.9	4 38 13.5
23.5	79 23 49.3	1 8 51.6	111 49 18.5	1 52 2.3	158 16 10.2	4 53 30.1
24.0	85 17 12.9	0 37 47.2	117 49 57.9	2 22 15.7	164 43 0.5	5 5 16.7
24.5	91 11 11.7	—0 6 13.0	123 53 25.8	2 51 8.2	171 14 43.0	5 13 16.8
25.0	97 6 19.2	+0 25 33.1	130 0 14.0	3 18 20.1	177 51 36.0	5 17 15.8
25.5	103 3 11.1	0 57 13.6	136 10 55.0	3 43 31.5	184 33 55.3	5 17 0.7
26.0	109 2 24.7	1 28 30.0	142 26 1.4	4 6 21.9	191 21 53.6	5 12 21.0
26.5	115 4 39.0	1 59 3.6	148 46 5.1	4 26 30.8	198 15 39.2	5 3 9.4
27.0	121 10 33.0	2 28 34.9	155 11 36.3	4 43 37.6	205 15 14.6	4 49 22.2
27.5	127 20 45.9	2 56 43.5	161 43 3.1	4 57 21.5	212 20 35.9	4 31 0.6
28.0	133 35 56.0	3 23 8.2	168 20 49.9	5 7 22.6	219 31 31.5	4 8 11.0
28.5	139 56 39.3	3 47 26.5	175 5 16.1	5 13 21.5	226 47 41.3	3 41 6.5
29.0	146 23 29.0	4 9 15.5	181 56 34.7	5 15 0.6	234 8 36.4	3 10 6.7
29.5	152 56 53.7	4 28 11.1	188 54 50.9	5 12 5.1	241 33 38.8	2 35 38.4
30.0	159 37 15.9	4 43 49.4	196 0 0.9	5 4 23.7	249 2 2.1	1 58 15.3
30.5	166 24 50.7	4 55 46.2	203 11 50.2	4 51 49.8	256 32 52.3	1 18 37.4
31.0	173 19 44.1	5 3 39.0	210 29 53.2	4 34 22.8	264 5 9.4	+0 37 29.8
31.5	180 21 51.4	+5 7 7.2	217 53 32.7	+4 12 9.4	271 37 49.0	—0 4 18.8

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.		AUGUST.		SEPTEMBER.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	264° 5′ 9″.5	+0° 37′ 29″.8	317° 3′ 11″.9	−3° 46′ 23″.4	6° 47′ 20″.2	−4° 58′ 58″.4
1.5	271 37 49.0	−0 4 18.8	324 13 48.3	4 11 9.7	13 20 43.0	4 51 47.7
2.0	279 9 44.7	0 45 58.2	331 19 31.3	4 31 44.4	19 48 37.2	4 40 56.6
2.5	286 39 50.2	1 26 38.7	338 19 46.1	4 47 56.3	26 11 9.8	4 26 42.1
3.0	294 7 2.4	2 5 33.5	345 14 6.9	4 59 40.7	32 28 34.4	4 9 22.5
3.5	301 30 22.5	2 42 0.4	352 2 16.6	5 6 58.4	38 41 10.8	3 49 16.7
4.0	308 48 58.7	3 15 22.9	358 44 7.2	5 9 55.5	44 49 24.3	3 26 43.7
4.5	316 2 7.5	3 45 11.4	5 19 39.4	5 8 41.5	51 53 44.1	3 2 2.4
5.0	323 9 15.1	4 11 3.7	11 49 1.9	5 3 29.0	56 54 44.0	2 35 31.4
5.5	330 9 57.3	4 32 44.6	18 12 30.6	4 54 32.7	62 53 0.4	2 7 28.6
6.0	337 3 59.9	4 50 5.4	24 30 27.7	4 42 8.7	68 49 12.0	1 38 11.5
6.5	343 51 18.3	5 3 3.3	30 43 20.3	4 26 33.7	74 43 58.9	1 7 57.4
7.0	350 31 56.3	5 11 40.2	36 51 39.4	4 8 4.8	80 38 2.6	0 37 3.1
7.5	357 6 5.6	5 16 1.9	42 55 59.6	3 46 59.0	86 32 4.4	−0 5 45.5
8.0	3 34 4.1	5 16 17.4	48 56 57.5	3 23 33.3	92 26 45.5	+0 25 38.5
8.5	9 56 15.3	5 12 37.5	54 55 11.4	2 58 4.5	98 22 45.9	0 56 51.6
9.0	16 13 6.5	5 5 14.8	60 51 20.1	2 30 49.1	104 20 44.1	1 27 36.0
9.5	22 25 7.8	5 54 22.8	66 46 2.8	2 2 3.5	110 21 16.2	1 57 33.3
10.0	28 32 52.1	4 40 15.8	72 39 58.0	1 32 4.0	116 24 55.7	2 26 24.4
10.5	34 36 53.3	4 23 8.3	78 33 43.1	1 1 7.3	122 32 12.3	2 53 49.4
11.0	40 37 45.9	4 3 15.2	84 27 54.4	−0 29 30.5	128 43 31.6	3 19 27.6
11.5	46 36 4.5	3 40 51.4	90 23 5.5	+0 2 29.0	134 59 14.5	3 42 57.9
12.0	52 32 22.9	3 16 12.3	96 19 48.3	0 34 33.0	141 19 36.5	4 3 59.1
12.5	58 27 14.2	2 49 33.3	102 18 31.4	1 6 22.6	147 44 47.1	4 22 9.8
13.0	64 21 9.9	2 21 10.4	108 19 40.8	1 37 38.2	154 14 49.7	4 37 9.7
13.5	70 14 40.2	1 51 19.8	114 23 38.9	2 7 59.5	160 49 41.4	4 48 39.4
14.0	76 8 13.1	1 20 18.5	120 30 44.8	2 37 5.4	167 29 12.7	4 56 22.0
14.5	82 2 14.6	0 48 24.1	126 41 12.3	3 4 34.2	174 13 8.1	5 0 3.0
15.0	87 57 8.8	−0 15 54.9	132 55 13.7	3 30 4.3	181 1 7.6	4 59 31.7
15.5	93 53 17.5	+0 16 50.0	139 12 55.6	3 53 14.2	187 52 46.0	4 54 41.4
16.0	99 51 0.5	0 49 30.9	145 34 21.5	4 13 42.8	194 47 35.3	4 45 30.1
16.5	105 50 35.5	1 21 47.7	151 59 31.0	4 31 10.0	201 45 5.9	4 32 0.8
17.0	111 52 18.1	1 53 19.3	158 28 20.3	4 45 17.4	208 44 47.3	4 14 22.0
17.5	117 56 22.0	2 23 44.5	165 0 43.2	4 55 48.3	215 46 10.3	3 52 47.1
18.0	124 2 59.4	2 52 42.2	171 36 31.2	5 2 28.7	222 48 47.5	3 27 34.1
18.5	130 12 21.2	3 19 50.9	178 15 34.2	5 5 7.5	229 52 14.4	2 59 5.9
19.0	136 24 36.8	3 44 49.7	184 57 41.4	5 3 36.9	236 56 10.1	2 27 48.9
19.5	142 39 54.4	4 7 18.3	191 42 41.8	4 57 52.8	244 0 17.1	1 54 12.8
20.0	148 58 22.0	4 26 57.4	198 30 25.2	4 47 54.8	251 4 21.9	1 18 49.8
20.5	155 20 6.8	4 43 28.7	205 20 41.7	4 33 46.8	258 8 13.7	0 42 13.8
21.0	161 45 15.9	4 56 35.5	212 13 22.9	4 15 36.5	265 11 44.2	+0 5 0.0
21.5	168 13 56.1	5 6 2.8	219 8 21.2	3 53 35.9	272 14 47.2	−0 32 16.1
22.0	174 46 14.2	5 11 37.5	226 5 30.4	3 28 0.8	279 17 16.8	1 8 59.4
22.5	181 22 16.9	5 13 8.9	233 4 45.1	2 59 11.0	286 19 7.4	1 44 35.4
23.0	188 2 10.5	5 10 28.9	240 5 59.7	2 27 30.4	293 20 12.3	2 18 31.1
23.5	194 46 0.8	5 3 32.2	247 9 8.7	1 53 26.0	300 20 23.0	2 50 15.1
24.0	201 33 52.7	4 52 17.0	254 14 5.4	1 17 28.3	307 19 28.6	3 19 19.0
24.5	208 25 49.9	4 36 45.0	261 20 40.8	0 40 10.8	314 17 15.8	3 45 17.2
25.0	215 21 54.0	4 17 1.9	268 28 43.6	+0 2 9.2	321 13 28.6	4 7 47.9
25.5	222 22 3.9	3 53 17.9	275 37 58.8	−0 35 59.3	328 7 48.4	4 26 32.9
26.0	229 26 15.1	3 25 47.9	282 48 7.5	1 13 36.3	334 59 54.7	4 41 18.7
26.5	236 34 18.5	2 54 51.8	289 58 46.1	1 50 3.3	341 49 25.3	4 51 56.3
27.0	243 46 0.3	2 20 54.7	297 9 26.7	2 24 43.0	348 35 58.0	4 58 21.1
27.5	251 1 1.2	1 44 26.8	304 19 37.1	2 57 0.0	355 19 11.2	5 0 33.2
28.0	258 18 55.0	1 6 3.3	311 28 41.5	3 26 22.1	1 58 44.6	4 58 37.2
28.5	265 39 9.7	+0 26 23.4	318 36 1.5	3 52 21.2	8 34 21.2	4 52 41.6
29.0	273 1 6.9	−0 13 50.3	325 40 57.6	4 14 34.2	15 5 47.5	4 42 58.2
29.5	280 24 2.2	0 53 53.3	332 42 50.6	4 32 43.6	21 32 54.6	4 29 41.7
30.0	287 47 6.8	1 33 0.5	339 41 3.3	4 46 37.4	27 55 38.4	4 13 9.2
30.5	295 9 28.3	2 10 27.9	346 35 2.0	4 56 9.7	34 14 0.3	3 53 39.3
31.0	302 30 12.1	2 45 34.4	353 24 18.1	5 1 20.2	40 28 7.4	3 31 31.7
31.5	309 48 23.8	−3 17 43.3	0 8 29.2	−5 2 13.5	46 38 12.0	−3 7 6.5

FOR GREENWICH MEAN NOON AND MIDNIGHT

Day of Month	OCTOBER True Longitude	OCTOBER Latitude	NOVEMBER True Longitude	NOVEMBER Latitude	DECEMBER True Longitude	DECEMBER Latitude
1.0	40 28 7.4	−3 31 31.7	84 41 1.7	+0 12 28.9	116 41 [illegible]	[illegible]
1.5	46 38 12.0	3 7 6.[illegible]	90 [illegible]	0 44 21.4	122 38 [illegible]	[illegible]
2.0	52 44 51.4	2 40 44.0	96 35 12.[illegible]	1 15 [illegible]	128 [illegible]	[illegible]
2.5	58 47 27.6	2 12 44.1	102 21 32.2	1 46 [illegible]	134 [illegible]	4 [illegible]
3.0	64 47 27.1	1 41 29.9	108 17 34.1	2 16 1.1	140 [illegible]	4 [illegible]
3.5	70 44 51.8	1 11 10.9	114 19 55.9	2 44 16.4	146 [illegible]	4 [illegible]
4.0	76 40 8.4	0 42 14.7	120 30 1.4	3 10 54.[illegible]	[illegible]	[illegible]
4.5	82 35 2.1	−0 10 26.2	126 50 14.1	3 35 38.9	[illegible]	[illegible]
5.0	88 28 46.4	+0 20 27.1	132 [illegible]	3 58 12.4	[illegible]	[illegible]
5.5	94 22 12.1	0 51 38.7	138 30 51.1	4 18 17.9	171 [illegible]	[illegible]
6.0	100 17 0.6	1 22 21.0	144 52 11.2	4 35 37.7	178 [illegible]	[illegible]
6.5	106 12 51.1	1 52 17.1	150 49 0.2	4 49 54.1	[illegible]	[illegible]
7.0	112 10 [illegible]	2 21 [illegible]	157 11 25.5	5 0 59.0	[illegible]	[illegible]
7.5	118 11 37.4	2 48 41.6	163 39 55.1	5 8 7.1	[illegible]	[illegible]
8.0	124 15 48.3	3 14 34.0	170 14 51.2	5 11 30.0	[illegible]	[illegible]
8.5	130 24 1.4	3 38 38.1	176 56 31.2	5 10 41.2	212 43 [illegible]	[illegible]
9.0	136 38 [illegible]	4 0 4.[illegible]	[illegible] 44 [illegible]	5 5 14.7	[illegible]	[illegible]
9.5	142 58 41.7	4 19 1.4	[illegible]	[illegible]	[illegible]	[illegible]
10.0	149 18 [illegible]	4 35 4.5	197 41 47.2	4 41 41.6	[illegible]	[illegible]
10.5	[illegible] 47 14.1	4 47 48.0	204 [illegible]	4 22 54.0	[illegible]	[illegible]
11.0	[illegible]	[illegible]	212 3 1.7	[illegible]	[illegible]	[illegible]
11.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON.

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Mean Noon.	Apparent Obliquity.	Equation of Equinoxes.		Precession of Equinoxes in Longitude.	The Sun's		Mean Longitude of Moon's Ascending Node.
		In Longitude.	In R. A.		Aberration.	Hor. Parallax.	
1871.	23° 27′						
Jan. 0	19″.18	−16″.62	−1s.02	0″.00	−20″.80	9″.00	100° 3′.8
10	19.35	16.23	0.99	1.38	20.79	9.00	99 32.0
20	19.57	15.94	0.98	2.75	20.77	8.99	99 0.2
30	19.83	15.79	0.97	4.13	20.74	8.98	98 28.4
Feb 9	20.09	15.79	0.97	5.50	20.71	8.96	97 56.7
19	20.35	15.96	0.98	6.88	20.67	8.94	97 24.9
Mar. 1	20.57	16.25	0.99	8.26	20.63	8.92	96 53.1
11	20.73	16.65	1.02	9.63	20.57	8.90	96 21.4
21	20.83	17.09	1.05	11.01	20.51	8.87	95 49.6
31	20.87	17.53	1.07	12.38	20.45	8.85	95 17.8
Apr. 10	20.85	17.91	1.10	13.76	20.39	8.82	94 46.0
20	20.78	18.20	1.11	15.14	20.34	8.80	94 14.3
30	20.68	18.36	1.12	16.51	20.29	8.78	93 42.5
May 10	20.57	18.39	1.12	17.89	20.24	8.76	93 10.7
20	20.47	18.27	1.12	19.26	20.19	8.74	92 38.9
30	20.39	18.04	1.10	20.64	20.16	8.72	92 7.2
June 9	20.37	17.71	1.08	22.02	20.13	8.71	91 35.4
19	20.40	17.33	1.06	23.39	20.11	8.71	91 3.6
29	20.49	16.93	1.04	24.77	20.11	8.70	90 31.9
July 9	20.63	16.57	1.01	26.14	20.10	8.70	90 0.1
19	20.83	16.29	1.00	27.52	20.12	8.71	89 28.3
29	21.06	16.11	0.99	28.89	20.14	8.72	88 56.5
Aug. 8	21.31	16.06	0.98	30.27	20.17	8.73	88 24.8
18	21.57	16.15	0.99	31.65	20.20	8.75	87 53.0
28	21.80	16.36	1.00	33.02	20.24	8.76	87 21.2
Sept. 7	21.99	16.68	1.02	34.40	20.29	8.79	86 49.5
17	22.13	17.08	1.04	35.77	20.35	8.81	86 17.7
27	22.20	17.50	1.07	37.15	20.41	8.83	85 45.9
Oct. 7	22.21	17.89	1.09	38.53	20.47	8.86	85 14.1
17	22.17	18.22	1.11	39.90	20.53	8.89	84 42.4
27	22.08	18.43	1.13	41.28	20.59	8.91	84 10.6
Nov. 6	21.96	18.49	1.13	42.65	20.64	8.93	83 38.8
16	21.84	18.39	1.12	44.03	20.69	8.95	83 7.1
26	21.74	18.14	1.11	45.41	20.73	8.97	82 35.3
Dec. 6	21.68	17.76	1.09	46.78	20.76	8.98	82 3.5
16	21.68	17.29	1.06	48.16	20.78	8.99	81 31.7
26	21.75	16.78	1.03	49.53	20.79	9.00	81 0.0
36	21.89	16.30	1.00	50.91	−20.79	9.00	80 28.2

Mean Obliquity, 1871.0, 23° 27′ 21″.23 Motion in 100 days,—0″.1272
Precession for 1871.5, . . . 50″.2573 Log. 1.70120
Precession in a Solar Day, . 0″.13760 Log. 9.13862
Precession in a Sidereal Day, 0″.13723 Log. 9.13743
Sun's Mean Hor. Parallax, . 8″.848

Daily Motion.

—3′.177

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR REDUCTION OF MEAN PLACES, 1871.0, TO APPARENT PLACES.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
Jan. 1	n 9.5115	0.3077	n 0.5700	1.3019	Mar. 1	n 9.1973	9.7632	n 1.2493	0.8185
2	9.5068	0.3041	0.6066	1.3003	2	9.1917	9.7477	1.2518	0.7955
3	9.5019	0.3004	0.6398	1.2985	3	9.1861	9.7322	1.2542	0.7712
4	9.4971	0.2966	0.6709	1.2966	4	9.1804	9.7166	1.2564	0.7452
5	9.4922	0.2925	0.6997	1.2945	5	9.1748	9.7010	1.2585	0.7174
6	n 9.4873	0.2883	n 0.7267	1.2923	6	n 9.1691	9.6853	n 1.2604	0.6876
7	9.4823	0.2840	0.7522	1.2899	7	9.1633	9.6695	1.2622	0.6555
8	9.4773	0.2794	0.7759	1.2874	8	9.1575	9.6538	1.2639	0.6207
9	9.4723	0.2747	0.7983	1.2847	9	9.1517	9.6381	1.2654	0.5827
10	9.4673	0.2698	0.8194	1.2819	10	9.1458	9.6224	1.2668	0.5410
11	n 9.4622	0.2647	n 0.8394	1.2789	11	n 9.1399	9.6068	n 1.2680	0.4948
12	9.4571	0.2594	0.8584	1.2758	12	9.1339	9.5913	1.2691	0.4428
13	9.4519	0.2539	0.8765	1.2725	13	9.1279	9.5760	1.2701	0.3837
14	9.4468	0.2482	0.8937	1.2690	14	9.1218	9.5609	1.2709	0.3151
15	9.4416	0.2424	0.9101	1.2654	15	9.1156	9.5460	1.2716	0.2336
16	n 9.4364	0.2364	n 0.9258	1.2616	16	n 9.1094	9.5315	n 1.2722	0.1330
17	9.4312	0.2302	0.9408	1.2576	17	9.1031	9.5173	1.2726	0.0018
18	9.4259	0.2238	0.9552	1.2535	18	9.0967	9.5036	1.2729	9.8130
19	9.4207	0.2172	0.9689	1.2491	19	9.0902	9.4904	1.2731	p 9.4713
20	9.4154	0.2104	0.9822	1.2447	20	9.0837	9.4777	1.2731	n 8.7634
21	n 9.4101	0.2034	n 0.9948	1.2400	21	n 9.0770	9.4657	n 1.2730	n 9.6147
22	9.4048	0.1962	1.0070	1.2351	22	9.0703	9.4545	1.2728	9.8839
23	9.3995	0.1888	1.0188	1.2300	23	9.0633	9.4439	1.2725	0.0488
24	9.3941	0.1812	1.0301	1.2248	24	9.0563	9.4339	1.2720	0.1678
25	9.3888	0.1733	1.0409	1.2193	25	9.0491	9.4249	1.2714	0.2609
26	n 9.3834	0.1653	n 1.0514	1.2136	26	n 9.0418	9.4166	n 1.2707	n 0.3374
27	9.3780	0.1571	1.0615	1.2078	27	9.0344	9.4093	1.2698	0.4024
28	9.3726	0.1487	1.0712	1.2017	28	9.0268	9.4029	1.2688	0.4586
29	9.3672	0.1400	1.0805	1.1953	29	9.0191	9.3976	1.2677	0.5083
30	9.3618	0.1312	1.0896	1.1888	30	9.0111	9.3932	1.2664	0.5527
31	n 9.3564	0.1221	n 1.0983	1.1820	31	n 9.0030	9.3900	n 1.2650	n 0.5929
Feb. 1	9.3510	0.1128	1.1067	1.1749	Apr. 1	8.9946	9.3879	1.2635	0.6294
2	9.3456	0.1033	1.1148	1.1676	2	8.9861	9.3869	1.2618	0.6631
3	9.3401	0.0936	1.1226	1.1601	3	8.9773	9.3867	1.2600	0.6941
4	9.3347	0.0836	1.1301	1.1523	4	8.9683	9.3876	1.2581	0.7230
5	n 9.3292	0.0735	n 1.1374	1.1442	5	n 8.9590	9.3895	n 1.2560	n 0.7500
6	9.3238	0.0631	1.1444	1.1358	6	8.9494	9.3925	1.2538	0.7752
7	9.3183	0.0524	1.1512	1.1271	7	8.9395	9.3962	1.2515	0.7989
8	9.3129	0.0416	1.1577	1.1181	8	8.9293	9.4007	1.2490	0.8212
9	9.3074	0.0305	1.1640	1.1088	9	8.9188	9.4060	1.2464	0.8424
10	n 9.3020	0.0192	n 1.1701	1.0991	10	n 8.9079	9.4121	n 1.2437	n 0.8624
11	9.2965	0.0077	1.1760	1.0891	11	8.8966	9.4193	1.2407	0.8814
12	9.2910	9.9960	1.1816	1.0787	12	8.8850	9.4268	1.2377	0.8994
13	9.2856	9.9840	1.1871	1.0679	13	8.8728	9.4349	1.2345	0.9166
14	9.2801	9.9718	1.1923	1.0567	14	8.8602	9.4434	1.2312	0.9331
15	n 9.2746	9.9594	n 1.1974	1.0451	15	n 8.8470	9.4524	n 1.2276	n 0.9488
16	9.2691	9.9467	1.2022	1.0331	16	8.8333	9.4618	1.2240	0.9638
17	9.2637	9.9338	1.2068	1.0206	17	8.8189	9.4716	1.2202	0.9782
18	9.2582	9.9207	1.2113	1.0075	18	8.8040	9.4817	1.2162	0.9920
19	9.2527	9.9074	1.2156	0.9939	19	8.7884	9.4921	1.2121	1.0052
20	n 9.2472	9.8939	n 1.2197	0.9798	20	n 8.7720	9.5026	n 1.2078	n 1.0179
21	9.2417	9.8801	1.2237	0.9650	21	8.7548	9.5135	1.2033	1.0302
22	9.2362	9.8661	1.2275	0.9496	22	8.7367	9.5243	1.1987	1.0420
23	9.2307	9.8520	1.2311	0.9334	23	8.7176	9.5352	1.1939	1.0533
24	9.2251	9.8376	1.2345	0.9166	24	8.6973	9.5460	1.1889	1.0642
25	n 9.2196	9.8231	n 1.2378	0.8989	25	n 8.6757	9.5569	n 1.1837	n 1.0747
26	9.2141	0.8084	1.2409	0.8803	26	8.6526	9.5678	1.1784	1.0848
27	9.2085	9.7935	1.2439	0.8608	27	8.6281	9.5786	1.1728	1.0946
28	9.2029	9.7784	1.2467	0.8402	28	8.6018	9.5894	1.1671	1.1041
29	9.1973	9.7632	1.2493	0.8185	29	8.5739	9.6000	1.1612	1.1132
30	n 9.1917	9.7477	n 1.2518	0.7955	30	n 8.5431	9.6104	n 1.1550	n 1.1220
31	n 9.1861	9.7322	n 1.2542	0.7712	31	n 8.5099	9.6207	n 1.1487	n 1.1305

January 1 to January 4, E = —0″.05.

January 5 to March 3, E = —0″.04.

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR REDUCTION OF MEAN PLACES, 1871.0, TO APPARENT PLACES.

Date		A.	B.	C.	D.	Date		A.	B.	C.	D.
May	1	[illegible]	9 6397	n 1 1467	n 1 1795	July	1	9 21[illegible]	[illegible]	[illegible]	n 1 [illegible]
	2	[illegible]	9 6567	1 1421	1 1387		2	9 2274	9 [illegible]17	[illegible]	1 [illegible]
	3	[illegible]	9 6467	[illegible]	1 1466		3	[illegible]	[illegible]	[illegible]	[illegible]
	4	[illegible]	[illegible]	1 1283	1 1563		4	9 2460	9 6416	[illegible]	[illegible]
	5	[illegible]	[illegible]	1 1210	1 1617		5	[illegible]	[illegible]	[illegible]	[illegible]
	6	n [illegible]	[illegible]	n 1 1135	n 1 [illegible]		6	9 2616	[illegible]	[illegible]	n 1 [illegible]
	7	[illegible]	[illegible]	[illegible]	1 17[illegible]		7	[illegible]	[illegible]	[illegible]	[illegible]
	8	[illegible]	[illegible]	1 0977	[illegible]		8	[illegible]	[illegible]	[illegible]	[illegible]
	9	[illegible]	[illegible]	[illegible]	[illegible]		9	[illegible]	[illegible]	[illegible]	[illegible]
	10	7 [illegible]	9 7047	[illegible]	[illegible]		10	[illegible]	[illegible]	[illegible]	[illegible]
	11	n 7 [illegible]	9 71[illegible]	n 1 0719	n 1 2012		11	[illegible]	[illegible]	[illegible]	n 1 [illegible]
	12	n 7 [illegible]	[illegible]	[illegible]	1 2070		12	[illegible]	[illegible]	[illegible]	[illegible]
	13	p 6 [illegible]	[illegible]	[illegible]	[illegible]		13	9 3144	[illegible]	[illegible]	[illegible]
	14	7 [illegible]	[illegible]	[illegible]	[illegible]		14	[illegible]	[illegible]	[illegible]	[illegible]
	15	7 [illegible]	[illegible]	[illegible]	[illegible]		15	[illegible]	[illegible]	[illegible]	[illegible]
	16	7 [illegible]	[illegible]	n 1 [illegible]	n 1 [illegible]		16	[illegible]	[illegible]	[illegible]	n 1 [illegible]
	17	[illegible]	[illegible]	1 0117	[illegible]		17	9 3412	[illegible]	[illegible]	[illegible]
	18	[illegible]	[illegible]	[illegible]	[illegible]		18	[illegible]	[illegible]	[illegible]	[illegible]
	19	[illegible]	[illegible]	[illegible]	[illegible]		19	[illegible]	[illegible]	[illegible]	[illegible]
	20	[illegible]	[illegible]	[illegible]	[illegible]		20	[illegible]	[illegible]	[illegible]	[illegible]
	21	[illegible]	[illegible]	n [illegible]	n 1 [illegible]		21	[illegible]	[illegible]	[illegible]	n 1 [illegible]
	22	[illegible]	[illegible]	[illegible]	[illegible]		22	9 3716	[illegible]	[illegible]	[illegible]
	23	[illegible]	[illegible]	[illegible]	[illegible]		23	9 3774	[illegible]	[illegible]	[illegible]
	24	[illegible]	[illegible]	[illegible]	[illegible]		24	[illegible]	p [illegible]	[illegible]	[illegible]
	25	[illegible]	[illegible]	[illegible]	[illegible]		25	[illegible]	n 7 [illegible]	[illegible]	[illegible]
	26	[illegible]	[illegible]	n [illegible]	n 1 [illegible]		26	[illegible]	n [illegible]	[illegible]	n 1 [illegible]
	27	[illegible]	[illegible]	[illegible]	[illegible]		27	[illegible]	[illegible]	[illegible]	[illegible]
	28	[illegible]	[illegible]	[illegible]	[illegible]		28	[illegible]	[illegible]	[illegible]	[illegible]
	29	[illegible]	[illegible]	[illegible]	[illegible]		29	[illegible]	[illegible]	[illegible]	[illegible]
	30	[illegible]	[illegible]	[illegible]	[illegible]		30	[illegible]	[illegible]	[illegible]	[illegible]
	31	[illegible]	[illegible]	n [illegible]	n 1 [illegible]		31	[illegible]	n [illegible]	[illegible]	n [illegible]
June	1	[illegible]	[illegible]	[illegible]	[illegible]	Aug	1	[illegible]	[illegible]	[illegible]	[illegible]
	2	[illegible]	[illegible]	[illegible]	[illegible]		2	[illegible]	[illegible]	[illegible]	[illegible]
	3	[illegible]	[illegible]	[illegible]	[illegible]		3	[illegible]	[illegible]	[illegible]	[illegible]
	4	[illegible]	[illegible]	[illegible]	[illegible]		4	[illegible]	[illegible]	[illegible]	[illegible]
	5	[illegible]	[illegible]	n [illegible]	n 1 [illegible]		5	[illegible]	n [illegible]	[illegible]	n [illegible]
	6	[illegible]	[illegible]	[illegible]	[illegible]		6	[illegible]	[illegible]	[illegible]	[illegible]
	7	[illegible]	[illegible]	[illegible]	[illegible]		7	[illegible]	[illegible]	[illegible]	[illegible]
	8	[illegible]	[illegible]	[illegible]	[illegible]		8	[illegible]	[illegible]	[illegible]	[illegible]
	9	[illegible]	[illegible]	[illegible]	[illegible]		9	[illegible]	[illegible]	[illegible]	[illegible]
	10	[illegible]	[illegible]	n [illegible]	n 1 [illegible]		10	[illegible]	n [illegible]	[illegible]	n [illegible]
	11	[illegible]	[illegible]	[illegible]	[illegible]		11	[illegible]	[illegible]	[illegible]	[illegible]
	12	[illegible]	[illegible]	[illegible]	[illegible]		12	[illegible]	[illegible]	[illegible]	[illegible]
	13	[illegible]	[illegible]	[illegible]	[illegible]		13	[illegible]	[illegible]	[illegible]	[illegible]
	14	[illegible]	[illegible]	[illegible]	[illegible]		14	[illegible]	[illegible]	[illegible]	[illegible]
	15	[illegible]	[illegible]	n [illegible]	n 1 [illegible]		15	[illegible]	n [illegible]	[illegible]	n [illegible]
	16	[illegible]	[illegible]	[illegible]	[illegible]		16	[illegible]	[illegible]	[illegible]	[illegible]
	17	[illegible]	[illegible]	[illegible]	[illegible]		17	[illegible]	[illegible]	[illegible]	[illegible]
	18	[illegible]	[illegible]	[illegible]	[illegible]		18	[illegible]	[illegible]	[illegible]	[illegible]
	19	[illegible]	[illegible]	[illegible]	[illegible]		19	[illegible]	[illegible]	[illegible]	[illegible]
	20	[illegible]	[illegible]	n [illegible]	n 1 [illegible]		20	[illegible]	n [illegible]	[illegible]	n [illegible]
	21	[illegible]	[illegible]	p [illegible]	[illegible]		21	[illegible]	[illegible]	[illegible]	[illegible]
	22	[illegible]	[illegible]	[illegible]	[illegible]		22	[illegible]	[illegible]	[illegible]	[illegible]
	23	[illegible]	[illegible]	[illegible]	[illegible]		23	[illegible]	[illegible]	[illegible]	[illegible]
	24	[illegible]	[illegible]	[illegible]	[illegible]		24	[illegible]	[illegible]	[illegible]	[illegible]
	25	[illegible]	[illegible]	[illegible]	n 1 [illegible]		25	[illegible]	n [illegible]	[illegible]	n [illegible]
	26	[illegible]	[illegible]	[illegible]	[illegible]		26	[illegible]	[illegible]	[illegible]	[illegible]
	27	[illegible]	[illegible]	[illegible]	[illegible]		27	[illegible]	[illegible]	[illegible]	[illegible]
	28	[illegible]	[illegible]	[illegible]	[illegible]		28	[illegible]	[illegible]	[illegible]	[illegible]
	29	[illegible]	[illegible]	[illegible]	[illegible]		29	[illegible]	[illegible]	[illegible]	[illegible]
	30	[illegible]	[illegible]	[illegible]	n 1 [illegible]		30	[illegible]	n [illegible]	[illegible]	n [illegible]
	31	[illegible]	[illegible]	[illegible]	n 1 [illegible]		31	[illegible]	n [illegible]	[illegible]	n [illegible]

[illegible]

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR REDUCTION OF MEAN PLACES, 1871.0, TO APPARENT PLACES.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
Sept. 1	9.5337	*n* 9.9855	1.2440	*n* 0.8596	Nov. 1	9.6716	*n* 0.0683	1.1614	1.1129
2	9.5363	9.9946	1.2467	0.8397	2	9.6740	0.0644	1.1550	1.1220
3	9.5389	0.0034	1.2493	0.8186	3	9.6765	0.0603	1.1484	1.1307
4	9.5415	0.0116	1.2518	0.7964	4	9.6789	0.0562	1.1416	1.1392
5	9.5440	0.0195	1.2541	0.7728	5	9.6814	0.0521	1.1345	1.1474
6	9.5465	*n* 0.0271	1.2562	*n* 0.7478	6	9.6839	*n* 0.0478	1.1272	1.1553
7	9.5490	0.0344	1.2582	0.7210	7	9.6864	0.0435	1.1197	1.1630
8	9.5514	0.0413	1.2601	0.6923	8	9.6890	0.0392	1.1118	1.1703
9	9.5539	0.0479	1.2619	0.6615	9	9.6915	0.0348	1.1037	1.1775
10	9.5562	0.0542	1.2635	0.6282	10	9.6941	0.0304	1.0952	1.1844
11	9.5586	*n* 0.0601	1.2651	*n* 0.5919	11	9.6967	*n* 0.0261	1.0865	1.1911
12	9.5609	0.0658	1.2664	0.5521	12	9.6993	0.0216	1.0774	1.1975
13	9.5632	0.0711	1.2677	0.5082	13	9.7018	0.0172	1.0680	1.2037
14	9.5655	0.0762	1.2688	0.4591	14	9.7044	0.0129	1.0582	1.2097
15	9.5678	0.0810	1.2698	0.4037	15	9.7071	0.0085	1.0481	1.2154
16	9.5701	*n* 0.0855	1.2706	*n* 0.3399	16	9.7097	*n* 0.0042	1.0376	1.2210
17	9.5723	0.0898	1.2714	0.2649	17	9.7123	9.9999	1.0267	1.2264
18	9.5745	0.0938	1.2720	0.1740	18	9.7150	9.9957	1.0154	1.2316
19	9.5767	0.0976	1.2724	0.0587	19	9.7176	9.9915	1.0036	1.2365
20	9.5789	0.1011	1.2728	9.9007	20	9.7203	9.9875	0.9914	1.2413
21	9.5810	*n* 0.1043	1.2730	*n* 9.6498	21	9.7230	*n* 9.9836	0.9786	1.2459
22	9.5832	0.1074	1.2731	*n* 8.9868	22	9.7256	9.9797	0.9654	1.2503
23	9.5854	0.1101	1.2731	*p* 9.4028	23	9.7283	9.9760	0.9515	1.2546
24	9.5875	0.1127	1.2729	9.7800	24	9.7310	9.9725	0.9370	1.2587
25	9.5896	0.1150	1.2727	9.9789	25	9.7337	9.9691	0.9220	1.2626
26	9.5917	*n* 0.1170	1.2722	0.1138	26	9.7364	*n* 9.9658	0.9062	1.2663
27	9.5939	0.1189	1.2717	0.2177	27	9.7391	9.9627	0.8896	1.2699
28	9.5960	0.1205	1.2710	0.3011	28	9.7418	9.9598	0.8724	1.2733
29	9.5981	0.1220	1.2702	0.3709	29	9.7445	9.9572	0.8542	1.2765
30	9.6002	0.1232	1.2693	0.4310	30	9.7473	9.9547	0.8350	1.2796
Oct. 1	9.6023	*n* 0.1242	1.2683	0.4837	Dec. 1	9.7500	*n* 9.9524	0.8149	1.2825
2	9.6044	0.1250	1.2671	0.5305	2	9.7527	9.9504	0.7936	1.2853
3	9.6065	0.1255	1.2657	0.5728	3	9.7554	9.9487	0.7710	1.2879
4	9.6086	0.1259	1.2643	0.6110	4	9.7581	9.9473	0.7471	1.2904
5	9.6108	0.1261	1.2627	0.6462	5	9.7608	9.9461	0.7216	1.2927
6	9.6129	*n* 0.1262	1.2609	0.6786	6	9.7635	*n* 9.9452	0.6944	1.2949
7	9.6150	0.1259	1.2591	0.7087	7	9.7662	9.9446	0.6652	1.2969
8	9.6171	0.1255	1.2571	0.7367	8	9.7689	9.9443	0.6338	1.2988
9	9.6193	0.1249	1.2549	0.7629	9	9.7716	9.9443	0.5997	1.3006
10	9.6213	0.1242	1.2527	0.7875	10	9.7742	9.9446	0.5626	1.3022
11	9.6235	*n* 0.1233	1.2502	0.8107	11	9.7769	*n* 9.9452	0.5219	1.3037
12	9.6256	0.1222	1.2477	0.8326	12	9.7796	9.9462	0.4767	1.3050
13	9.6279	0.1209	1.2449	0.8533	13	9.7822	9.9474	0.4262	1.3062
14	9.6301	0.1195	1.2421	0.8730	14	9.7849	9.9489	0.3688	1.3072
15	9.6323	0.1179	1.2390	0.8917	15	9.7875	9.9508	0.3025	1.3081
16	9.6345	*n* 0.1161	1.2358	0.9095	16	9.7902	*n* 9.9530	0.2241	1.3088
17	9.6367	0.1141	1.2325	0.9266	17	9.7928	9.9555	0.1281	1.3095
18	9.6389	0.1120	1.2290	0.9428	18	9.7954	9.9584	0.0044	1.3100
19	9.6412	0.1098	1.2253	0.9584	19	9.7980	9.9615	9.8308	1.3103
20	9.6434	0.1074	1.2215	0.9732	20	9.8005	9.9650	9.5352	1.3105
21	9.6457	*n* 0.1048	1.2175	0.9875	21	9.8031	*n* 9.9687	*p* 8.0170	1.3106
22	9.6480	0.1021	1.2134	1.0012	22	9.8056	9.9728	*n* 9.5092	1.3105
23	9.6503	0.0993	1.2090	1.0144	23	9.8082	9.9772	9.8173	1.3103
24	9.6526	0.0964	1.2045	1.0270	24	9.8107	9.9818	9.9955	1.3100
25	9.6549	0.0933	1.1998	1.0392	25	9.8132	9.9866	0.1214	1.3095
26	9.6572	*n* 0.0901	1.1949	1.0509	26	9.8157	*n* 9.9917	*n* 0.2189	1.3089
27	9.6596	0.0867	1.1898	1.0622	27	9.8182	9.9971	0.2983	1.3081
28	9.6619	0.0832	1.1846	1.0731	28	9.8206	0.0027	0.3653	1.3072
29	9.6643	0.0797	1.1791	1.0836	29	9.8230	0.0085	0.4232	1.3062
30	9.6667	0.0760	1.1734	1.0937	30	9.8255	0.0145	0.4741	1.3050
31	9.6691	*n* 0.0722	1.1675	1.1034	31	9.8278	*n* 0.0207	*n* 0.5196	1.3037
32	9.6716	*n* 0.0683	1.1614	1.1129	32	9.8302	*n* 0.0271	*n* 0.5607	1.3023

September 9 to December 27, E = —0″.05.

December 28 to December 32, E = —0″.04.

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1871.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ.	*f*.	Log *g*.	G.	Log *h*.	H.	Log *i*.	*i*.	*f*.	G.	H.
Jan. 1	0.0039	—15″.01	0.8339	162° 41′	1.3092	349° 30′	*n* 0.2074	—1″.61	—1ˢ.001	10ʰ 50ᵐ.7	23ʰ 18ᵐ.0
2	.0066	14.85	0.8292	162 38	1.3090	348 33	0.2440	1.75	0.990	10 50.5	23 14.2
3	.0094	14.68	0.8245	162 36	1.3087	347 37	0.2772	1.89	0.979	10 50.4	23 10.5
h 4	.0121	14.52	0.8197	162 33	1.3084	346 41	0.3083	2.03	0.968	10 50.2	23 6.7
(7.0) 5	.0148	14.36	0.8149	162 31	1.3081	345 44	0.3371	2.17	0.957	10 50.1	23 2.9
6	.0176	—14.20	0.8101	162 30	1.3078	344 47	*n* 0.3641	—2.31	—0.946	10 50.0	22 59.1
7	.0203	14.04	0.8052	162 28	1.3074	343 50	0.3896	2.45	0.936	10 49.9	22 55.3
8	.0231	13.88	0.8002	162 27	1.3071	342 53	0.4133	2.59	0.925	10 49.8	22 51.5
9	.0258	13.72	0.7952	162 27	1.3067	341 56	0.4357	2.73	0.915	10 49.8	22 47.7
10	.0285	13.56	0.7902	162 26	1.3063	340 59	0.4568	2.86	0.904	10 49.8	22 43.9
11	.0313	—13.40	0.7851	162 26	1.3058	340 1	*n* 0.4768	—3.00	—0.893	10 49.8	22 40.1
12	.0340	13.24	0.7800	162 27	1.3054	339 4	0.4958	3.13	0.883	10 49.8	22 36.3
13	.0367	13.09	0.7748	162 28	1.3050	338 7	0.5139	3.27	0.873	10 49.8	22 32.5
14	.0395	12.94	0.7696	162 29	1.3045	337 9	0.5311	3.40	0.862	10 49.9	22 28.6
15	.0422	12.78	0.7644	162 30	1.3040	336 11	0.5475	3.53	0.852	10 50.0	22 24.7
16	.0450	—12.63	0.7591	162 32	1.3035	335 14	*n* 0.5632	—3.66	—0.842	10 50.1	22 20.9
17	.0477	12.48	0.7538	162 34	1.3030	334 15	0.5782	3.79	0.832	10 50.3	22 17.0
18	.0504	12.33	0.7484	162 37	1.3025	333 17	0.5926	3.91	0.822	10 50.5	22 13.1
h 19	.0532	12.18	0.7431	162 40	1.3019	332 19	0.6063	4.04	0.812	10 50.7	22 9.3
(8.0) 20	.0559	12.04	0.7377	162 43	1.3014	331 21	0.6196	4.16	0.802	10 50.9	22 5.4
21	.0587	—11.89	0.7322	162 47	1.3008	330 23	*n* 0.6322	—4.29	—0.793	10 51.2	22 1.5
22	.0614	11.75	0.7267	162 52	1.3002	329 24	0.6444	4.41	0.783	10 51.4	21 57.6
23	.0641	11.61	0.7212	162 56	1.2996	328 25	0.6562	4.53	0.774	10 51.7	21 53.7
24	.0669	11.46	0.7157	163 1	1.2991	327 26	0.6675	4.65	0.764	10 52.1	21 49.7
25	.0696	11.32	0.7101	163 7	1.2984	326 27	0.6783	4.77	0.755	10 52.4	21 45.8
26	.0723	—11.19	0.7045	163 12	1.2978	325 28	*n* 0.6888	—4.88	—0.746	10 52.8	21 41.9
27	.0751	11.05	0.6989	163 19	1.2973	324 28	0.6989	5.00	0.737	10 53.2	21 37.9
28	.0778	10.91	0.6933	163 25	1.2966	323 29	0.7086	5.11	0.727	10 53.7	21 33.9
29	.0806	10.78	0.6876	163 32	1.2959	322 29	0.7179	5.22	0.718	10 54.1	21 29.9
30	.0833	10.64	0.6820	163 40	1.2953	321 29	0.7270	5.33	0.710	10 54.6	21 25.9
31	.0860	—10.51	0.6763	163 47	1.2947	320 29	*n* 0.7357	—5.44	—0.701	10 55.2	21 21.9
Feb. 1	.0888	10.38	0.6705	163 56	1.2940	319 29	0.7441	5.55	0.692	10 55.7	21 17.9
2	.0915	10.25	0.6648	164 4	1.2933	318 28	0.7522	5.65	0.684	10 56.3	21 13.9
h 3	.0942	10.13	0.6590	164 13	1.2927	317 28	0.7600	5.75	0.675	10 56.9	21 9.9
(9.0) 4	.0970	10.00	0.6533	164 22	1.2920	316 28	0.7675	5.85	0.667	10 57.5	21 5.9
5	.0997	— 9.88	0.6475	164 32	1.2913	315 27	*n* 0.7748	—5.95	—0.659	10 58.1	21 1.8
6	.1025	9.75	0.6416	164 42	1.2907	314 26	0.7818	6.05	0.650	10 58.8	20 57.7
7	.1052	9.63	0.6358	164 52	1.2900	313 25	0.7886	6.15	0.642	10 59.5	20 53.7
8	.1079	9.51	0,6300	165 3	1.2893	312 23	0.7951	6.24	0.634	11 0.2	20 49.5
9	.1107	9.40	0.6242	165 14	1.2886	311 22	0.8014	6.33	0.626	11 0.9	20 45.5
10	.1134	— 9.28	0.6184	165 25	1.2880	310 20	*n* 0.8075	—6.42	—0.619	11 1.7	20 41.3
11	.1161	9.16	0.6125	165 37	1.2874	309 18	0.8134	6.51	0.611	11 2.5	20 37.2
12	.1189	9.05	0.6067	165 49	1.2867	308 16	0.8190	6.59	0.603	11 3.3	20 33.1
13	.1216	8.94	0.6008	166 1	1.2861	307 14	0.8245	6.68	0.596	11 4.1	20 28.9
14	.1244	8.83	0.5950	166 13	1.2854	306 12	0.8297	6.76	0.588	11 4.9	20 24.8
15	.1271	— 8.72	0.5891	166 26	1.2848	305 9	*n* 0.8348	—6.84	—0.581	11 5.7	20 20.6
16	.1298	8.61	0.5832	166 39	1.2842	304 7	0.8396	6.91	0.574	11 6.6	20 16.5
17	.1326	8.50	0.5774	166 52	1.2836	303 5	0.8442	6.98	0.567	11 7.5	20 12.3
h 18	.1353	8.39	0.5715	167 5	1.2830	302 1	0.8487	7.06	0.560	11 8.3	20 8.1
(10.0) 19	.1380	8.29	0.5656	167 19	1.2824	300 58	0.8530	7.13	0.553	11 9.2	20 3.9
20	.1408	— 8.19	0.5598	167 32	1.2818	299 55	*n* 0.8571	—7.20	—0.546	11 10.1	19 59.7
21	.1435	8.08	0.5539	167 46	1.2813	298 52	0.8611	7.26	0.539	11 11.1	19 55.5
22	.1463	7.98	0.5480	168 0	1.2808	297 48	0.8649	7.33	0.532	11 12.0	19 51.2
23	.1490	7.88	0.5421	168 13	1.2802	296 44	0.8685	7.39	0.526	11 12.9	19 46.9
24	.1517	7.78	0.5362	168 27	1.2797	295 41	0.8719	7.44	0.519	11 13.8	19 42.7
25	.1545	— 7.68	0.5303	168 41	1.2792	394 37	*n* 0.8752	— 7.50	—0.512	11 14.7	19 38.5
26	.1572	7.59	0.5244	168 55	1.2787	293 33	0.8783	7.56	0.506	11 15.7	19 34.2
27	.1600	7.49	0.5185	169 9	1.2782	292 29	0.8813	7.61	0.499	11 16.6	19 29.9
28	.1627	7.40	0.5126	169 22	1.2778	291 25	0.8841	7.66	0.493	11 17.5	19 25.7
29	0.1654	— 7.30	0.5067	169 36	1.2773	290 21	*n* 0.8867	—7.70	— 0.487	11 18.4	19 21.4

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1871.0, TO APPARENT PLACES.

Solar day Sid. hour.	τ.	*f*.	Log *g*.	G.	Log *h*.	H.	Log *i*.	*i*.	*f*.	G.	H.
		″		° ′		° ′		″	″	h m	h m
Mar. 1	0.1654	− 7.30	0.5067	169 36	1.2773	290 21	*n* 0.8867	−7.70	−0.487	11 18.4	19 21.4
2	.1682	7.21	0.5008	169 50	1.2769	289 16	0.8892	7.75	0.481	11 19.3	19 17.1
3	.1709	7.12	0.4949	170 3	1.2765	288 12	0.8916	7.79	0.475	11 20.2	19 12.8
4	.1736	7.03	0.4889	170 16	1.2761	287 8	0.8938	7.83	0.469	11 21.1	19 8.5
5	.1764	6.94	0.4830	170 29	1.2758	286 3	0.8959	7.87	0.462	11 22.0	19 4.2
h 6	.1791	− 6.85	0.4770	170 42	1.2754	284 58	*n* 0.8978	−7.90	−0.456	11 22.8	18 59.9
(11.0 7	.1819	6.76	0.4710	170 55	1.2751	283 54	0.8996	7.94	0.450	11 23.7	18 55.6
8	.1846	6.67	0.4650	171 7	1.2748	282 49	0.9013	7.97	0.445	11 24.5	18 51.3
9	.1873	6.58	0.4589	171 19	1.2746	281 44	0.9028	7.99	0.439	11 25.2	18 46.9
10	.1901	6.49	0.4528	171 30	1.2743	280 39	0.9042	8.02	0.433	11 26.0	18 42.6
11	.1928	− 6.40	0.4467	171 41	1.2741	279 34	*n* 0.9054	−8.04	−0.427	11 26.7	18 38.3
12	.1955	6.32	0.4405	171 52	1.2739	278 29	0.9065	8.06	0.421	11 27.5	18 33.9
13	.1983	6.23	0.4343	172 2	1.2737	277 24	0.9075	8.08	0.416	11 28.1	18 29.6
14	.2010	6.15	0.4280	172 12	1.2735	276 19	0.9083	8.10	0.410	11 28.8	18 25.3
15	.2038	6.06	0.4217	172 21	1.2734	275 14	0.9090	8.11	0.404	11 29.4	18 20.9
16	.2065	− 5.97	0.4153	172 29	1.2733	274 9	*n* 0.9096	−8.12	−0.398	11 30.0	18 16.6
17	.2092	5.89	0.4089	172 37	1.2732	273 4	0.9100	8.13	0.393	11 30.5	18 12.3
18	.2120	5.80	0.4024	172 45	1.2732	271 59	0.9103	8.13	0.387	11 31.0	18 7.9
19	.2147	5.72	0.3958	172 51	1.2731	270 54	0.9105	8.14	0.381	11 31.4	18 3.6
20	.2174	5.63	0.3892	172 57	1.2731	269 49	0.9105	8.14	0.376	11 31.8	17 59.3
h 21	.2202	− 5.55	0.3824	173 3	1.2731	268 45	*n* 0.9104	−8.14	−0.370	11 32.2	17 55.0
(12.0) 22	.2229	5.46	0.3756	173 7	1.2732	267 40	0.9102	8.13	0.364	11 32.4	17 50.7
23	.2257	5.38	0.3687	173 10	1.2733	266 35	0.9099	8.13	0.359	11 32.7	17 46.3
24	.2284	5.29	0.3616	173 13	1.2733	265 30	0.9094	8.12	0.353	11 32.9	17 42.0
25	.2311	5.21	0.3544	173 15	1.2735	264 25	0.9088	8.11	0.347	11 33.0	17 37.7
26	.2339	− 5.12	0.3471	173 15	1.2736	263 21	*n* 0.9081	−8.09	−0.341	11 33.0	17 33.4
27	.2366	5.04	0.3396	173 15	1.2738	262 16	0.9072	8.08	0.336	11 33.0	17 29.1
28	.2394	4.95	0.3321	173 14	1.2739	261 12	0.9062	8.06	0.330	11 33.0	17 24.8
29	.2421	4.86	0.3244	173 12	1.2742	260 8	0.9051	8.04	0.324	11 32.8	17 20.5
30	.2448	4.78	0.3165	173 9	1.2744	259 3	0.9038	8.01	0.318	11 32.6	17 16.2
31	.2476	− 4.69	0.3084	173 4	1.2746	257 59	*n* 0.9024	−7.99	−0.313	11 32.3	17 11.9
Apr. 1	.2503	4.60	0.3001	172 58	1.2749	256 56	0.9009	7.96	0.307	11 31.9	17 7.7
2	.2530	4.51	0.2917	172 51	1.2751	255 52	0.8992	7.93	0.301	11 31.4	17 3.5
3	.2558	4.42	0.2830	172 42	1.2755	254 48	0.8974	7.90	0.295	11 30.8	16 59.2
4	.2585	4.33	0.2742	172 32	1.2758	253 44	0.8955	7.86	0.289	11 30.2	16 54.9
h 5	.2613	− 4.24	0.2651	172 21	1.2762	252 41	*n* 0.8934	−7.82	−0.283	11 29.4	16 50.7
(13.0) 6	.2640	4.15	0.2557	172 7	1.2765	251 37	0.8912	7.78	0.277	11 28.5	16 46.5
7	.2667	4.06	0.2461	171 53	1.2769	250 34	0.8889	7.74	0.271	11 27.5	16 42.3
8	.2695	3.96	0.2362	171 36	1.2773	249 31	0.8864	7.70	0.264	11 26.4	16 38.1
9	.2722	3.87	0.2260	171 18	1.2778	248 28	0.8838	7.65	0.258	11 25.2	16 33.9
10	.2749	− 3.78	0.2155	170 57	1.2783	247 26	*n* 0.8811	−7.60	−0.252	11 23.8	16 29.7
11	.2777	3.68	0.2048	170 34	1.2787	246 23	0.8781	7.55	0.245	11 22.3	16 25.5
12	.2804	3.58	0.1936	170 9	1.2792	245 21	0.8751	7.50	0.239	11 20.6	16 21.4
13	.2832	3.49	0.1821	169 41	1.2797	244 19	0.8719	7.44	0.233	11 18.8	16 17.3
14	.2859	3.39	0.1702	169 11	1.2802	243 17	0.8686	7.39	0.226	11 16.7	16 13.1
15	.2886	− 3.29	0.1578	168 38	1.2807	242 15	*n* 0.8650	−7.33	−0.219	11 14.5	16 9.0
16	.2914	3.19	0.1450	168 2	1.2813	241 13	0.8614	7.27	0.213	11 12.1	16 4.9
17	.2941	3.09	0.1318	167 22	1.2818	240 12	0.8576	7.20	0.206	11 9.5	16 0.8
18	.2968	2.98	0.1181	166 39	1.2824	239 10	0.8536	7.14	0.199	11 6.6	15 56.7
19	.2996	2.88	0.1040	165 51	1.2829	238 10	0.8495	7.07	0.192	11 3.4	15 52.7
h 20	.3023	− 2.77	0.0893	164 59	1.2834	237 9	*n* 0.8452	−7.00	−0.185	11 0.0	15 48.6
(14.0) 21	.3051	2.67	0.0741	164 2	1.2841	236 8	0.8407	6.93	0.178	10 56.1	15 44.5
22	.3078	2.56	0.0583	163 0	1.2847	235 7	0.8361	6.86	0.171	10 52.0	15 40.5
23	.3105	2.45	0.0419	161 52	1.2853	234 7	0.8313	6.78	0.164	10 47.4	15 36.5
24	.3133	2.34	0.0249	160 36	1.2859	233 7	0.8263	6.70	0.156	10 42.4	15 32.5
25	.3160	− 2.23	0.0071	159 14	1.2865	232 7	*n* 0.8211	−6.62	−0.149	10 36.9	15 28.5
26	.3188	2.12	9.9886	157 42	1.2871	231 8	0.8158	6.54	0.141	10 30.8	15 24.5
27	.3215	2.01	9.9695	156 1	1.2877	230 8	0.8102	6.46	0.134	10 24.0	15 20.5
28	.3242	1.89	9.9498	154 9	1.2884	229 8	0.8045	6.38	0.126	10 16.6	15 16.5
29	.3270	1.78	9.9297	152 6	1.2890	228 10	0.7986	6.29	0.118	10 8.4	15 12.7
30	.3297	− 1.66	9.9087	149 47	1.2896	227 10	*n* 0.7924	−6.20	−0.111	9 59.1	15 8.7
31	0.3324	− 1.54	9.8873	147 14	1.2903	226 12	*n* 0.7861	−6.11	−0.103	9 48.9	15 4.8

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1871.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ.	*f.*	Log *g*.	G.	Log *h*.	H.	Log *i*.	*i*.	*f*.	G.	H.
		″		° ′		° ′		″	s	h m	h m
May 1	0.3324	− 1.54	9.8873	147 14	1.2903	226 12	n 0.7861	−6.11	−0.103	9 48.9	15 4.8
2	.3352	1.42	9.8656	144 23	1.2909	225 13	0.7795	6.02	0.095	9 37.6	15 0.9
3	.3379	1.30	9.8437	141 12	1.2915	224 15	0.7727	5.92	0.087	9 24.8	14 57.0
4	.3407	1.18	9.8220	137 39	1.2922	223 17	0.7657	5.83	0.078	9 10.6	14 53.1
h 5	.3434	1.05	9.8008	133 41	1.2928	222 19	0.7584	5.73	0.070	8 54.7	14 49.3
(15.0) 6	.3461	− 0.93	9.7807	129 15	1.2935	221 21	n 0.7509	−5.63	−0.062	8 37.0	14 45.4
7	.3489	0.80	9.7622	124 23	1.2941	220 24	0.7431	5.53	0.053	8 17.6	14 41.6
8	.3516	0.67	9.7463	119 6	1.2947	219 27	0.7351	5.43	0.045	7 56.4	14 37.8
9	.3543	0.54	9.7336	113 23	1.2953	218 30	0.7268	5.33	0.036	7 33.6	14 34.0
10	.3571	0.41	9.7249	117 20	1.2959	217 33	0.7182	5.23	0.027	7 9.4	14 30.2
11	.3598	− 0.28	9.7210	101 5	1.2965	216 36	n 0.7093	−5.12	−0.019	6 44.3	14 26.4
12	.3626	0.15	9.7221	94 43	1.2971	215 39	0.7001	5.01	0.010	6 18.8	14 22.6
13	.3653	− 0.02	9.7284	88 23	1.2977	214 43	0.6906	4.90	−0.001	5 53.6	14 18.9
14	.3680	+ 0.12	9.7396	82 15	1.2983	213 47	0.6808	4.80	+0.008	5 29.0	14 15.1
15	.3708	0.26	9.7550	76 25	1.2989	212 51	0.6706	4.68	0.017	5 5.7	14 11.4
16	.3735	+ 0.39	9.7739	70 59	1.2995	211 55	n 0.6600	−4.57	+0.026	4 44.0	14 7.7
17	.3762	0.53	9.7954	65 59	1.3000	210 59	0.6491	4.46	0.036	4 23.9	14 3.9
18	.3790	0.67	9.8188	61 26	1.3005	210 4	0.6377	4.34	0.045	4 5.7	14 0.3
19	.3817	0.81	9.8433	57 18	1.3011	209 8	0.6259	4.23	0.054	3 49.2	13 56.5
20	.3845	0.96	9.8685	53 34	1.3016	208 13	0.6137	4.11	0.064	3 34.2	13 52.9
h 21	.3872	+ 1.10	9.8938	50 12	1.3022	207 18	n 0.6010	−3.99	+0.073	3 20.8	13 49.2
(16.0) 22	.3899	1.25	9.9191	47 10	1.3027	206 23	0.5878	3.87	0.083	3 8.6	13 45.5
23	.3927	1.39	9.9440	44 25	1.3031	205 28	0.5740	3.75	0.093	2 57.7	13 41.9
24	.3954	1.54	9.9685	41 56	1.3036	204 34	0.5598	3.63	0.103	2 47.7	13 38.3
25	.3982	1.69	9.9924	39 41	1.3041	203 39	0.5448	3.51	0.113	2 38.7	13 34.6
26	.4009	+ 1.84	0.0156	37 39	1.3045	202 45	n 0.5292	−3.38	+0.122	2 30.6	13 31.0
27	.4036	1.99	0.0382	35 46	1.3049	201 50	0.5129	3.26	0.132	2 23.1	13 27.3
28	.4064	2.14	0.0601	34 3	1.3054	200 56	0.4959	3.13	0.142	2 16.2	13 23.7
29	.4091	2.29	0.0814	32 27	1.3058	200 2	0.4781	3.01	0.153	2 9.8	13 20.1
30	.4118	2.44	0.1020	30 59	1.3062	199 9	0.4594	2.88	0.163	2 3.9	13 16.6
31	.4146	+ 2.60	0.1220	29 37	1.3066	198 15	n 0.4397	−2.75	+0.173	1 58.5	13 13.0
June 1	.4173	2.75	0.1413	28 21	1.3069	197 21	0.4189	2.62	0.183	1 53.4	13 9.4
2	.4201	2.91	0.1600	27 10	1.3073	196 28	0.3970	2.49	0.194	1 48.7	13 5.9
3	.4228	3.06	0.1781	26 4	1.3076	195 34	0.3738	2.36	0.204	1 44.2	13 2.3
4	.4255	3.22	0.1956	25 1	1.3080	194 41	0.3492	2.23	0.214	1 40.1	12 58.7
h 5	.4283	+ 3.37	0.2125	24 2	1.3083	193 48	n 0.3230	−2.10	+0.225	1 36.1	12 55.2
(17.0) 6	.4310	3.53	0.2290	23 6	1.3085	192 55	0.2950	1.97	0.235	1 32.4	12 51.7
7	.4337	3.69	0.2450	22 13	1.3088	192 1	0.2649	1.84	0.246	1 28.9	12 48.1
8	.4365	3.85	0.2605	21 22	1.3091	191 8	0.2325	1.71	0.257	1 25.5	12 44.5
9	.4392	4.01	0.2756	20 34	1.3093	190 15	0.1973	1.57	0.267	1 22.3	12 41.0
10	.4420	+ 4.17	0.2903	19 48	1.3095	189 22	n 0.1588	−1.44	+0.278	1 19.2	12 37.5
11	.4447	4.33	0.3046	19 4	1.3097	188 30	0.1165	1.31	0.289	1 16.2	12 34.0
12	.4474	4.49	0.3184	18 21	1.3098	187 37	0.0695	1.17	0.300	1 13.4	12 30.5
13	.4502	4.65	0.3319	17 40	1.3100	186 44	0.0167	1.04	0.310	1 10.7	12 26.9
14	.4529	4.81	0.3450	17 1	1.3102	185 51	9.9564	0.90	0.321	1 8.1	12 23.4
15	.4556	+ 4.98	0.3578	16 23	1.3102	184 59	n 9.8863	−0.77	+0.332	1 5.5	12 19.9
16	.4584	5.14	0.3703	15 46	1.3104	184 6	9.8024	0.63	0.343	1 3.1	12 16.4
17	.4611	5.30	0.3824	15 11	1.3105	183 14	9.6983	0.50	0.353	1 0.7	12 12.9
18	.4639	5.46	0.3943	14 36	1.3105	182 21	9.5608	0.36	0.364	0 58.4	12 9.4
19	.4666	5.63	0.4058	14 3	1.3105	181 29	9.3586	0.23	0.375	0 56.2	12 5.9
h 20	.4693	+ 5.79	0.4170	13 30	1.3106	180 36	n 8.9700	−0.09	+0.386	0 54.0	12 2.4
(18.0) 21	.4721	5.95	0.4280	12 59	1.3106	179 44	p 8.6286	+0.04	0.397	0 51.9	11 58.9
22	.4748	6.11	0.4388	12 28	1.3106	178 51	9.2504	0.18	0.408	0 49.9	11 55.4
23	.4776	6.28	0.4493	11 58	1.3106	177 59	9.4959	0.31	0.419	0 47.8	11 51.9
24	.4803	6.44	0.4595	11 28	1.3105	177 6	9.6522	0.45	0.429	0 45.9	11 48.4
25	.4830	+ 6.60	0.4695	10 59	1.3104	176 13	9.7665	+0.58	+0.440	0 44.0	11 44.9
26	.4858	6.77	0.4793	10 31	1.3103	175 21	9.8568	0.72	0.451	0 42.1	11 41.4
27	.4885	6.93	0.4889	10 4	1.3102	174 28	9.9314	0.85	0.462	0 40.3	11 37.9
28	.4912	7.09	0.4983	9 37	1.3101	173 36	9.9949	0.99	0.473	0 38.5	11 34.4
29	.4940	7.25	0.5074	9 10	1.3099	172 43	0.0503	1.12	0.483	0 36.7	11 30.9
30	.4967	+ 7.41	0.5164	8 44	1.3098	171 50	0.0993	+1.26	+0.494	0 35.0	11 27.3
31	0.4995	+ 7.57	0.5252	8 19	1.3096	170 58	0.1432	+1.39	+0.505	0 33.3	11 23.9

FOR WASHINGTON MEAN MIDNIGHT.

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Solar day. Sid. hour.	τ.	*f.*	Log *g.*	G.	Log *h.*	H.	Log *i.*	*i.*	*f.*	G.	H.
		″		° ′		° ′		″	s	h m	h m
July 1	0.4995	+ 7.57	0.5252	8 19	1.3096	170 58	0.1432	+1.39	+0.505	0 33.3	11 23.9
2	.5022	7.73	0.5338	7 54	1.3093	170 5	0.1828	1.52	0.516	0 31.6	11 20.3
3	.5049	7.89	0.5422	7 29	1.3092	169 12	0.2191	1.66	0.526	0 29.9	11 16.8
4	.5077	8.05	0.5504	7 5	1.3089	168 20	0.2524	1.79	0.537	0 28.3	11 13.3
h 5	.5104	8.21	0.5585	6 41	1.3087	167 27	0.2833	1.92	0.548	0 26.8	11 9.8
(19.0) 6	.5131	+ 8.37	0.5664	6 18	1.3084	166 33	0.3121	+2.05	+0.558	0 25.2	11 6.2
7	.5159	8.53	0.5741	5 55	1.3081	165 41	0.3389	2.18	0.569	0 23.7	11 2.7
8	.5186	8.69	0.5817	5 32	1.3078	164 47	0.3640	2.31	0.579	0 22.2	10 59.1
9	.5214	8.84	0.5892	5 10	1.3075	163 54	0.3877	2.44	0.590	0 20.7	10 55.6
10	.5241	9.00	0.5965	4 48	1.3072	163 1	0.4100	2.57	0.600	0 19.2	10 52.1
11	.5268	+ 9.15	0.6037	4 27	1.3068	162 8	0.4312	+2.70	+0.610	0 17.8	10 48.5
12	.5296	9.31	0.6107	4 5	1.3064	161 14	0.4512	2.83	0.620	0 16.4	10 44.9
13	.5323	9.46	0.6176	3 45	1.3060	160 20	0.4703	2.95	0.631	0 15.0	10 41.3
14	.5350	9.61	0.6243	3 24	1.3056	159 27	0.4884	3.08	0.641	0 13.6	10 37.8
15	.5378	9.76	0.6309	3 3	1.3052	158 33	0.5057	3.20	0.651	0 12.2	10 34.2
16	.5405	+ 9.92	0.6374	2 43	1.3047	157 39	0.5222	+3.33	+0.661	0 10.9	10 30.6
17	.5433	10.07	0.6438	2 23	1.3043	156 45	0.5380	3.45	0.671	0 9.6	10 27.0
18	.5460	10.21	0.6500	2 4	1.3039	155 51	0.5531	3.57	0.681	0 8.3	10 23.4
19	.5487	10.36	0.6562	1 45	1.3034	154 57	0.5676	3.69	0.691	0 7.0	10 19.8
h 20	.5515	10.51	0.6622	1 26	1.3029	154 2	0.5815	3.81	0.701	0 5.7	10 16.1
(20.0) 21	.5542	+10.66	0.6681	1 6	1.3024	153 8	0.5949	+3.93	+0.710	0 4.4	10 12.5
22	.5569	10.80	0.6739	0 48	1.3019	152 13	0.6078	4.05	0.720	0 3.2	10 8.9
23	.5597	10.94	0.6796	0 30	1.3014	151 19	0.6201	4.17	0.730	0 2.0	10 5.3
24	.5624	11.09	0.6851	0 12	1.3008	150 24	0.6320	4.29	0.739	0 0.8	10 1.6
25	.5652	11.23	0.6906	359 55	1.3003	149 28	0.6435	4.40	0.748	23 59.7	9 57.9
26	.5679	+11.37	0.6960	359 37	1.2997	148 33	0.6546	+4.51	+0.758	23 58.5	9 54.2
27	.5706	11.50	0.7013	359 20	1.2992	147 37	0.6653	4.63	0.767	23 57.3	9 50.5
28	.5734	11.64	0.7065	359 3	1.2986	146 42	0.6756	4.74	0.776	23 56.2	9 46.8
29	.5761	11.78	0.7116	358 46	1.2980	145 46	0.6855	4.85	0.785	23 55.1	9 43.1
30	.5789	11.92	0.7165	358 30	1.2975	144 51	0.6951	4.96	0.794	23 54.0	9 39.4
31	.5816	+12.05	0.7214	358 14	1.2968	143 55	0.7043	+5.06	+0.803	23 52.9	9 35.7
Aug. 1	.5843	12.18	0.7263	357 58	1.2962	142 59	0.7133	5.17	0.812	23 51.9	9 31.9
2	.5871	12.32	0.7310	357 43	1.2956	142 2	0.7220	5.27	0.821	23 50.8	9 28.1
3	.5898	12.45	0.7356	357 27	1.2950	141 6	0.7303	5.37	0.830	23 49.8	9 24.4
4	.5925	12.58	0.7402	357 12	1.2944	140 9	0.7385	5.48	0.838	23 48.8	9 20.6
h 5	.5953	+12.70	0.7447	356 57	1.2938	139 12	0.7463	+5.58	+0.847	23 47.8	9 16.8
(21.0) 6	.5980	12.83	0.7491	356 43	1.2931	138 15	0.7539	5.67	0.855	23 46.9	9 13.0
7	.6008	12.96	0.7534	356 28	1.2925	137 18	0.7613	5.77	0.864	23 45.9	9 9.2
8	.6035	13.08	0.7577	356 14	1.2919	136 20	0.7684	5.87	0.872	23 44.9	9 5.3
9	.6062	13.20	0.7618	356 0	1.2913	135 23	0.7753	5.96	0.880	23 44.0	9 1.5
10	.6090	+13.32	0.7659	355 47	1.2907	134 25	0.7819	+6.05	+0.888	23 43.1	8 57.7
11	.6117	13.44	0.7700	355 33	1.2900	133 27	0.7883	6.14	0.896	23 42.2	8 53.8
12	.6144	13.56	0.7739	355 20	1.2894	132 29	0.7946	6.23	0.904	23 41.4	8 49.9
13	.6172	13.68	0.7778	355 8	1.2888	131 30	0.8006	6.32	0.912	23 40.5	8 46.0
14	.6199	13.80	0.7816	354 55	1.2881	130 32	0.8064	6.40	0.920	23 39.7	8 42.1
15	.6227	+13.92	0.7853	354 43	1.2875	129 33	0.8120	+6.49	+0.928	23 38.9	8 38.2
16	.6254	14.03	0.7890	354 31	1.2869	128 34	0.8175	6.57	0.935	23 38.1	8 34.3
17	.6281	14.14	0.7926	354 19	1.2863	127 35	0.8227	6.65	0.943	23 37.3	8 30.3
18	.6309	14.25	0.7962	354 8	1.2857	126 35	0.8278	6.73	0.950	23 36.5	8 26.3
19	.6336	14.36	0.7997	353 57	1.2852	125 36	0.8327	6.80	0.958	23 35.8	8 22.4
h 20	.6363	+14.47	0.8031	353 46	1.2846	124 36	0.8374	+6.88	+0.965	23 35.1	8 18.4
(22.0) 21	.6391	14.58	0.8065	353 35	1.2839	123 36	0.8419	6.95	0.972	23 34.4	8 14.4
22	.6418	14.69	0.8098	353 25	1.2834	122 36	0.8463	7.02	0.979	23 33.7	8 10.4
23	.6446	14.79	0.8131	353 15	1.2828	121 36	0.8505	7.09	0.986	23 33.0	8 6.4
24	.6473	14.90	0.8163	353 5	1.2822	120 35	0.8545	7.15	0.993	23 32.4	8 2.3
25	.6500	+15.00	0.8194	352 56	1.2816	119 35	0.8584	+ 7.22	+1.000	23 31.7	7 58.3
26	.6528	15.11	0.8226	352 47	1.2811	118 34	0.8621	7.28	1.007	23 31.1	7 54.3
27	.6555	15.21	0.8256	352 38	1.2806	117 33	0.8657	7.34	1.014	23 30.5	7 50.2
28	.6583	15.31	0.8286	352 29	1.2801	116 32	0.8692	7.40	1.021	23 30.0	7 46.1
29	.6610	15.41	0.8316	352 21	1.2796	115 30	0.8725	7.46	1.027	23 29.4	7 42.0
30	.6637	+15.51	0.8345	352 13	1.2791	114 29	0.8756	+7.51	+1.034	23 28.9	7 37.9
31	0.6665	+15.61	0.8373	352 5	1.2786	113 27	0.8786	+7.56	+1.040	23 28.4	7 33.8

FOR WASHINGTON MEAN MIDNIGHT.

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Solar day. Sid. hour.	τ	f.	Log *g*	G.	Log *h*.	H.	Log *i*.	*i*.	f.	G	H.
		″		° ′		° ′		″	s	h m	h m
Sept. 1	0.6692	+15.70	0.8401	351 58	1.2781	112 25	0.8814	+7.61	+1.047	23 27.9	7 29.7
2	.6719	15.80	0.8429	351 51	1.2777	111 24	0.8841	7.66	1.053	23 27.3	7 25.6
3	.6747	15.89	0.8457	351 44	1.2773	110 21	0.8867	7.70	1.060	23 26.9	7 21.4
h 4	.6774	15.99	0.8484	351 38	1.2769	109 19	0.8892	7.75	1.066	23 26.5	7 17.3
(23.0) 5	.6802	16.08	0.8510	351 31	1.2766	108 16	0.8915	7.79	1.072	23 26.1	7 13.1
6	.6829	+16.18	0.8536	351 25	1.2761	107 14	0.8936	+7.83	+1.078	23 25.7	7 8.9
7	.6856	16.27	0.8562	351 20	1.2757	106 11	0.8956	7.86	1.085	23 25.3	7 4.7
8	.6884	16.36	0.8587	351 14	1.2754	105 8	0.8975	7.90	1.091	23 25.0	7 0.5
9	.6911	16.45	0.8613	351 9	1.2752	104 5	0.8993	7.93	1.097	23 24.6	6 56.3
10	.6938	16.54	0.8637	351 5	1.2749	103 2	0.9009	7.96	1.103	23 24.3	6 52.1
11	.6966	+16.63	0.8662	351 0	1.2747	101 59	0.9025	+7.99	+1.109	23 24.0	6 47.9
12	.6993	16.72	0.8686	350 56	1.2744	100 56	0.9038	8.01	1.115	23 23.8	6 43.7
13	.7021	16.81	0.8710	350 53	1.2742	99 52	0.9051	8.04	1.121	23 23.5	6 39.5
14	.7048	16.90	0.8733	350 49	1.2740	98 49	0.9062	8.06	1.127	23 23.3	6 35.3
15	.7075	16.99	0.8757	350 46	1.2738	97 45	0.9072	8.08	1.133	23 23.1	6 31.0
16	.7103	+17.08	0.8780	350 43	1.2736	96 41	0.9080	+8.09	+1.139	23 22.9	6 26.7
17	.7130	17.17	0.8803	350 41	1.2735	95 38	0.9088	8.11	1.144	23 22.7	6 22.5
18	.7157	17.25	0.8825	350 38	1.2734	94 34	0.9094	8.12	1.150	23 22.6	6 18.3
h 19	.7185	17.34	0.8848	350 36	1.2732	93 30	0.9098	8.12	1.156	23 22.4	6 14.0
(0.0) 20	.7212	17.43	0.8870	350 35	1.2732	92 26	0.9102	8.13	1.162	23 22.3	6 9.7
21	.7240	+17.52	0.8892	350 33	1.2731	91 22	0.9104	+8.14	+1.168	23 22.2	6 5.5
22	.7267	17.60	0.8914	350 32	1.2731	90 18	0.9105	8.14	1.174	23 22.1	6 1.2
23	.7294	17.69	0.8935	350 31	1.2731	89 14	0.9105	8.14	1.179	23 22.1	5 56.9
24	.7322	17.78	0.8957	350 31	1.2731	88 10	0.9103	8.13	1.185	23 22.1	5 52.7
25	.7349	17.86	0.8978	350 31	1.2732	87 5	0.9101	8.13	1.191	23 22.0	5 48.3
26	.7377	+17.95	0.8999	350 31	1.2732	86 2	0.9096	+8.12	+1.197	23 22.0	5 44.1
27	.7404	18.04	0.9021	350 31	1.2734	84 58	0.9091	8.11	1.203	23 22.1	5 39.9
28	.7431	18.13	0.9042	350 32	1.2735	83 53	0.9084	8.10	1.209	23 22.1	5 35.5
29	.7459	18.22	0.9062	350 32	1.2736	82 49	0.9076	8.08	1.215	23 22.2	5 31.3
30	.7486	18.31	0.9083	350 34	1.2738	81 45	0.9067	8.07	1.220	23 22.2	5 27.0
Oct. 1	.7513	+18.40	0.9104	350 35	1.2741	80 40	0.9057	+8.05	+1.226	23 22.3	5 22.7
2	.7541	18.49	0.9125	350 37	1.2743	79 36	0.9045	8.03	1.232	23 22.5	5 18.4
3	.7568	18.58	0.9146	350 39	1.2745	78 32	0.9031	8.00	1.238	23 22.6	5 14.1
4	.7596	18.67	0.9166	350 41	1.2748	77 28	0.9017	7.97	1.244	23 22.7	5 9.9
h 5	.7623	18.76	0.9187	350 43	1.2750	76 24	0.9001	7.94	1.251	23 22.9	5 5.6
(1.0) 6	.7650	+18.85	0.9208	350 46	1.2753	75 20	0.8983	+7.91	+1.257	23 23.1	5 1.3
7	.7678	18.94	0.9228	350 49	1.2757	74 16	0.8965	7.88	1.263	23 23.3	4 57.1
8	.7705	19.04	0.9249	350 52	1.2760	73 13	0.8945	7.84	1.269	23 23.5	4 52.9
9	.7732	19.13	0.9269	350 55	1.2763	72 9	0.8923	7.80	1.275	23 23.7	4 48.6
10	.7760	19.22	0.9289	350 59	1.2768	71 5	0.8901	7.76	1.282	23 23.9	4 44.3
11	.7787	+19.32	0.9310	351 2	1.2772	70 1	0.8876	+7.72	+1.288	23 24.2	4 40.1
12	.7815	19.42	0.9331	351 6	1.2776	68 58	0.8851	7.67	1.294	23 24.4	4 35.9
13	.7842	19.51	0.9353	351 11	1.2780	67 55	0.8823	7.63	1.301	23 24.7	4 31.7
14	.7869	19.61	0.9374	351 15	1.2785	66 51	0.8795	7.58	1.307	23 25.0	4 27.4
15	.7897	19 71	0.9395	351 20	1.2790	65 48	0.8764	7.52	1.314	23 25.3	4 23.2
16	.7924	+19.81	0.9416	351 24	1.2794	64 45	0.8732	+7.47	+1.321	23 25.6	4 19.0
17	.7951	19.91	0.9437	351 29	1.2800	63 41	0.8699	7.41	1.327	23 25.9	4 14.7
18	.7979	20.02	0.9458	351 34	1.2805	62 39	0.8664	7.35	1.334	23 26.3	4 10.6
19	.8006	20.12	0.9480	351 39	1.2810	61 36	0.8627	7.29	1.341	23 26.6	4 6.4
h 20	.8034	20.23	0.9502	351 44	1.2816	60 33	0.8589	7.23	1.348	23 27.0	4 2.2
(2.0) 21	.8061	+20.33	0.9523	351 50	1.2821	59 31	0.8549	+7.16	+1.355	23 27.3	3 58.1
22	.8088	20.44	0.9545	351 55	1.2827	58 28	0.8508	7.09	1.363	23 27.7	3 53.9
23	.8116	20.55	0.9567	352 1	1.2833	57 26	0.8464	7.02	1.370	23 28.1	3 49.7
24	.8143	20.66	0.9589	352 7	1.2839	56 24	0.8419	6.95	1.377	23 28.4	3 45.6
25	.8171	20.77	0.9611	352 12	1.2845	55 22	0.8372	6.87	1.385	23 28.8	3 41.5
26	.8198	+20.88	0.9634	352 18	1.2851	54 20	0.8323	+6.80	+1.392	23 29.2	3 37.3
27	.8225	20.99	0.9656	352 24	1.2858	53 18	0.8272	6.72	1.400	23 29.6	3 33.2
28	.8253	21.11	0.9679	352 30	1.2864	52 17	0.8220	6.64	1.407	23 30.0	3 29.1
29	.8280	21.23	0.9702	352 36	1.2871	51 15	0.8165	6.55	1.415	23 30.4	3 25.0
30	.8307	21.34	0.9725	352 42	1.2877	50 14	0.8108	6.47	1.423	23 30.8	3 20.9
31	.8335	+21.46	0.9748	352 49	1.2883	49 13	0.8049	+6.38	+1.431	23 31.2	3 16.9
32	0.8362	+21.58	0.9771	352 55	1.2890	48 12	0.7988	+6.29	+1.439	23 31.6	3 12.8

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1871.0, TO APPARENT PLACES.

Solar day Sid. hour.	τ.	*f*.	Log *g*.	G.	Log *h*.	H.	Log *i*.	*i*.	*f*.	G.	H.
Nov. 1	0.8362	+21″.58	0.9771	352° 55′	1.2890	48° 12′	0.7988	+6″.29	+1ˢ.439	23ʰ 31ᵐ.6	3ʰ 12ᵐ.8
2	.8390	21.70	0.9794	353 1	1.2896	47 10	0.7924	6.20	1.447	23 32.1	3 8.7
3	.8417	21.83	0.9818	353 7	1.2902	46 10	0.7858	6.11	1.455	23 32.5	3 4.7
h 4	.8444	21.95	0.9842	353 13	1.2909	45 9	0.7790	6.01	1.464	23 32.9	3 0.6
(3.0). 5	.8472	22.08	0.9866	353 19	1.2916	44 9	0.7719	5.91	1.472	23 33.3	2 56.6
6	.8499	+22.21	0.9890	353 25	1.2922	43 9	0.7646	+5.82	+1.481	23 33.7	2 52.6
7	.8526	22.34	0.9914	353 32	1.2929	42 9	0.7571	5.72	1.489	23 34.1	2 48.6
8	.8554	22.47	0.9939	353 38	1.2935	41 9	0.7492	5.61	1.498	23 34.5	2 44.6
9	.8581	22.60	0.9963	353 44	1.2942	40 9	0.7411	5.51	1.507	23 34.9	2 40.6
10	.8609	22.73	0.9988	353 50	1.2949	39 9	0.7326	5.40	1.516	23 35.3	2 36.6
11	.8636	+22.87	1.0013	353 55	1.2956	38 10	0.7239	+5.29	+1.525	23 35.7	2 32.7
12	.8663	23.01	1.0038	354 1	1.2962	37 11	0.7148	5.19	1.534	23 36.1	2 28.7
13	.8691	23.15	1.0063	354 7	1.2968	36 11	0.7054	5.07	1.543	23 36.5	2 24.7
14	.8718	23.28	1.0089	354 12	1.2974	35 12	0.6956	4.96	1.552	23 36.8	2 20.8
15	.8745	23.42	1.0114	354 18	1.2980	34 14	0.6855	4.84	1.562	23 37.2	2 16.9
16	.8773	+23.57	1.0140	354 23	1.2986	33 15	0.6750	+4.73	+1.571	23 37.6	2 13.0
17	.8800	23.71	1.0165	354 29	1.2993	32 16	0.6641	4.61	1.581	23 37.9	2 9.1
18	.8828	23.86	1.0191	354 34	1.2999	31 18	0.6528	4.50	1.590	23 38.3	2 5.2
h 19	.8855	24.00	1.0217	354 39	1.3004	30 20	0.6410	4.37	1.600	23 38.6	2 1.3
(4.0) 20	.8882	24.15	1.0243	354 44	1.3010	29 21	0.6288	4.25	1.610	23 38.9	1 57.4
21	.8910	+24.30	1.0270	354 48	1.3015	28 23	0.6160	+4.13	+1.620	23 39.2	1 53.5
22	.8937	24.45	1.0296	354 53	1.3021	27 26	0.6028	4.01	1.630	23 39.5	1 49.7
23	.8965	24.60	1.0322	354 58	1.3026	26 27	0.5889	3.88	1.640	23 39.8	1 45.8
24	.8992	24.76	1.0349	355 2	1.3032	25 29	0.5744	3.75	1.650	23 40.1	1 41.9
25	.9019	24.91	1.0375	355 6	1.3037	24 32	0.5594	3.63	1.661	23 40.4	1 38.1
26	.9047	+25.07	1.0402	355 10	1.3042	23 35	0.5436	+3.50	+1.671	23 40.7	1 34.3
27	.9074	25.22	1.0428	355 14	1.3046	22 37	0.5270	3.36	1.681	23 40.9	1 30.5
28	.9101	25.38	1.0455	355 17	1.3051	21 40	0.5098	3.23	1.692	23 41.2	1 26.7
29	.9129	25.54	1.0482	355 21	1.3055	20 43	0.4916	3.10	1.703	23 41.4	1 22.9
30	.9156	25.70	1.0509	355 24	1.3060	19 46	0.4724	2.97	1.713	23 41.6	1 19.1
Dec. 1	.9184	+25.86	1.0535	355 27	1.3063	18 49	0.4523	+2.83	+1.724	23 41.8	1 15.3
2	.9211	26.03	1.0562	355 30	1.3068	17 52	0.4310	2.70	1.735	23 42.0	1 11.5
3	.9238	26.19	1.0589	355 33	1.3071	16 55	0.4084	2.56	1.746	23 42.2	1 7.7
h 4	.9266	26.35	1.0616	355 35	1.3075	15 58	0.3845	2.42	1.757	23 42.4	1 3.9
(5.0) 5	.9293	26.52	1.0643	355 38	1.3078	15 2	0.3590	2.29	1.768	23 42.5	1 0.1
6	.9320	+26.68	1.0669	355 40	1.3082	14 5	0.3318	+2.15	+1.779	23 42.7	0 56.3
7	.9348	26.85	1.0696	355 42	1.3084	13 9	0.3026	2.01	1.790	23 42.8	0 52.6
8	.9375	27.02	1.0723	355 44	1.3087	12 12	0.2712	1.87	1.801	23 42.9	0 48.8
9	.9403	27.19	1.0750	355 45	1.3090	11 16	0.2371	1.73	1.812	23 43.0	0 45.1
10	.9430	27.35	1.0776	355 47	1.3093	10 19	0.2000	1.58	1.824	23 43.1	0 41.3
11	.9457	+27.52	1.0803	355 48	1.3096	9 23	0.1593	+1.44	+1.835	23 43.2	0 37.5
12	.9485	27.69	1.0830	355 49	1.3097	8 27	0.1141	1.30	1.846	23 43.3	0 33.8
13	.9512	27.86	1.0856	355 50	1.3099	7 31	0.0636	1.16	1.857	23 43.3	0 30.1
14	.9539	28.03	1.0883	355 50	1.3101	6 34	0.0062	1.01	1.869	23 43.4	0 26.3
15	.9567	28.21	1.0909	355 51	1.3102	5 38	9.9399	0.87	1.880	23 43.4	0 22.5
16	.9594	+28.38	1.0935	355 51	1.3103	4 42	9.8615	+0.73	+1.892	23 43.4	0 18.8
17	.9622	28.55	1.0961	355 51	1.3104	3 46	9.7655	0.58	1.903	23 43.4	0 15.1
18	.9649	28.72	1.0987	355 51	1.3105	2 50	9.6418	0.44	1.915	23 43.4	0 11.3
19	.9676	28.89	1.1013	355 51	1.3105	1 54	9.4682	0.29	1.926	23 43.4	0 7.6
h 20	.9704	29.07	1.1039	355 50	1.3106	0 58	9.1726	0.15	1.938	23 43.3	0 3.9
(6.0) 21	.9731	+29.24	1.1065	355 49	1.3106	0 2	*p* 7.6544	+0.00	+1.949	23 43.3	0 0.1
22	.9758	29.41	1.1090	355 48	1.3105	359 6	*n* 9.1466	−0.14	1.961	23 43.2	23 56.4
23	.9786	29.58	1.1116	355 47	1.3105	358 10	9.4547	0.28	1.972	23 43.2	23 52.7
24	.9813	29.76	1.1141	355 46	1.3105	357 13	9.6329	0.43	1.984	23 43.1	23 48.9
25	.9841	29.93	1.1166	355 45	1.3104	356 17	9.7588	0.57	1.995	23 43.0	23 45.1
26	.9868	+30.10	1.1191	355 43	1.3103	355 21	*n* 9.8563	−0.72	+2.007	23 42.9	23 41.4
27	.9895	30.27	1.1216	355 42	1.3102	354 25	9.9357	0.86	2.018	23 42.8	23 37.7
28	.9923	30.45	1.1241	355 40	1.3100	353 29	0.0027	1.01	2.030	23 42.7	23 33.9
29	.9950	30.62	1.1265	355 38	1.3099	352 32	0.0606	1.15	2.041	23 42.5	23 30.1
30	0.9978	30.79	1.1289	355 36	1.3097	351 36	0.1115	1.29	2.053	23 42.4	23 26.4
31	1.0005	+30.96	1.1314	355 33	1.3095	350 40	*n* 0.1570	−1.44	+2.064	23 42.2	23 22.7
32	1.0032	+31.13	1.1337	355 31	1.3093	349 43	*n* 0.1981	−1.58	+2.075	23 42.1	23 18.9

BESSEL'S FORMULÆ OF REDUCTION FOR THE FIXED STARS,

WITH DR. PETERS'S COEFFICIENTS, AND BESSEL'S NOTATION.

$\mathrm{A} = \tau - 0.34243 \sin \text{☊} + 0.00410 \sin 2\,\text{☊} - 0.02519 \sin 2\odot + 0.00294 \sin (\odot + 82^\circ\ 18')$.
$\mathrm{B} = -9''.2237 \cos \text{☊} + 0''.0896 \cos 2\,\text{☊} - 0''.5507 \cos 2\odot - 0''.0093 \cos (\odot + 280^\circ\ 43')$.
$\mathrm{C} = -20''.4451 \cos \omega \cos \odot$.
$\mathrm{D} = -20''.4451 \sin \odot$.
$\mathrm{E} = -0''.0469 \sin \text{☊} + 0''.0015 \sin 2\,\text{☊} - 0''.0034 \sin 2\odot$.

$a = 46''.0825 + 20''.0546 \sin \alpha \tan \delta$.
$b = \cos \alpha \tan \delta$.
$c = \cos \alpha \sec \delta$.
$d = \sin \alpha \sec \delta$.

$a' = 20''.0546 \cos \alpha$.
$b' = -\sin \alpha$.
$c' = \tan \omega \cos \delta - \sin \alpha \sin \delta$.
$d' = \cos \alpha \sin \delta$.

μ = the annual proper motion in right ascension.
μ' = the annual proper motion in declination.

τ = the time reckoned from Jan. $0 + \overset{\mathrm{d}}{0}78$, (when the sun's mean longitude is 280°,) and expressed in fractional parts of a tropical year.
$\odot$ = the sun's true longitude.
☊ = the longitude of the moon's ascending node.
ω = the obliquity of the ecliptic.

α = the star's mean right ascension for the beginning of the year.
δ = the star's mean declination for the beginning of the year.

α' = the star's apparent right ascension at the time τ.
δ' = the star's apparent declination at the time τ.

$\alpha' - \alpha = \mathrm{A}a + \mathrm{B}b + \mathrm{C}c + \mathrm{D}d + \mathrm{E} + \tau\mu$.
$\delta' - \delta = \mathrm{A}a' + \mathrm{B}b' + \mathrm{C}c' + \mathrm{D}d' + \tau\mu'$.

The following formulæ may also be used by putting

$f = 46''.0825\,\mathrm{A} + \mathrm{E}$. $\quad i = \mathrm{C} \tan \omega$.
$g \cos \mathrm{G} = 20''.0546\,\mathrm{A}$. $\quad h \sin \mathrm{H} = \mathrm{C}$.
$g \sin \mathrm{G} = \mathrm{B}$ $\quad h \cos \mathrm{H} = \mathrm{D}$.
$\alpha' - \alpha = f + \tau\mu + g \sin (\mathrm{G} + \alpha) \tan \delta + h \sin (\mathrm{H} + \alpha) \sec \delta$.
$\delta' - \delta = \tau\mu' + g \cos (\mathrm{G} + \alpha) + h \cos (\mathrm{H} + \alpha) \sin \delta + i \cos \delta$.

Tables V. and VI. of the Appendix contain the following terms, which may be added to A and B, when great accuracy is required:

$$\begin{aligned}\Delta\mathrm{A} = {} & -0.00405 \sin 2\,\text{☾} + 0.00135 \sin (\text{☾} - \Gamma') + 0.00025 \sin (2\odot - \text{☊}) \\ & + 0.00010 \sin 2 (\odot - \Gamma') - 0.00005 \sin 2 (\odot - \text{☊}) + 0.00009 \sin (2\Gamma' - \text{☊}) \\ & + 0.00005 \cos \Gamma' + 0.00004 \sin 2\Gamma' - 0.00011 \sin (3\odot - \Gamma).\end{aligned}$$

$$\begin{aligned}\Delta\mathrm{B} = {} & -0''.0886 \cos 2\,\text{☾} + 0''.0067 \cos (2\odot - \text{☊}) + 0''.0024 \cos (2\Gamma' - \text{☊}) \\ & - 0''.0023 \sin \Gamma' + 0''.0008 \cos 2\Gamma' - 0''.0027 \cos (3\odot - \Gamma).\end{aligned}$$

In which—

☾ = the moon's mean longitude.
Γ = the longitude of the sun's perigee.
Γ' = the longitude of the moon's perigee.

Other terms, which become sensible for stars very near the pole, will be found on page 503.

MEAN PLACES FOR 1871.0. (Jan. 0+.078, Washington.)

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ′ ″	″
α Andromedæ	2	0 1 43.382	+ 3.088	+28 22 42.07	+19.90
γ Pegasi (*Algenib*)	3.2	0 6 35.700	3.083	+14 27 59.37	20.05
* β Hydri	3	0 18 55.870	3.258	−77 58 54.18	20.25
α Cassiopeæ	var.	0 33 12.045	3.364	+55 49 45.85	19.80
β Ceti	2	0 37 6.754	3.013	−18 41 41.88	19.83
*21 Cassiopeæ	6	0 37 10.202	+ 3.828	+74 16 54.84	+19.73
ε Piscium	4	0 56 14.987	3.109	+ 7 11 42.56	19.48
* α Ursæ Min. (*Polaris*)	2	1 11 37.880	20.279	+88 37 17.55	19.08
θ^1 Ceti	3	1 17 34.542	2.998	− 8 50 57.85	18.72
*38 Cassiopeæ	6	1 21 39.996	4.351	+69 35 58.04	18.72
η Piscium	4.3	1 24 34.925	+ 3.199	+14 40 48.92	+18.72
α Eridani (*Achernar*)	1	1 32 54.259	2.235	−57 53 33.08	18.42
υ Piscium	4	1 38 35.072	3.162	+ 8 30 27.34	18.27
β Arietis	3.2	1 47 31.034	3.300	+20 10 35.86	17.79
*50 Cassiopeæ	4	1 52 27.949	4.977	+71 47 42.05	17.69
α Arietis	2	1 59 54.319	+ 3.368	+22 51 5.06	+17.24
ξ^1 Ceti	4.5	2 6 9.833	3.169	+ 8 14 25.44	17.08
* ι Cassiopeæ	4	2 18 27.992	4.838	+66 49 12.28	16.49
γ Ceti	3.4	2 36 37.007	3.102	+ 2 41 27.15	15.40
α Ceti	2.3	2 55 32.226	3.129	+ 3 34 55.50	14.36
*48 Cephei (H.)	6	3 4 2.569	+ 7.342	+77 15 22.81	+13.87
ζ Arietis	4.5	3 7 29.395	3.437	+20 33 53.59	13.65
α Persei	2	3 15 7.375	4.247	+49 23 58.29	13.17
δ Persei	3	3 33 44.812	4.239	+47 22 20.46	11.90
η Tauri	3	3 39 49.147	3.554	+23 42 15.10	11.47
ζ Persei	3	3 46 1.628	+ 3.756	+31 29 53.72	+11.04
γ^1 Eridani	3	3 52 0.677	2.796	−13 52 36.78	10.54
γ Tauri	4	4 12 27.240	3.407	+15 18 50.88	9.07
ε Tauri	4.3	4 21 5.150	3.495	+18 53 32.20	8.38
α Tauri (*Aldebaran*)	1	4 28 31.227	3.436	+16 14 52.48	7.63
* 9 Camelopardalis	4	4 41 14.358	+ 5.912	+66 7 10.30	+ 6.77
ι Aurigæ	3	4 48 35.715	3.896	+32 57 33.59	6.14
11 Orionis	5	4 57 11.998	3.425	+15 13 20.14	5.42
α Aurigæ (*Capella*)	1	5 7 9.753	4.422	+45 51 49.18	4.16
β Orionis (*Rigel*)	1	5 9 20.337	2.881	− 8 21 9.42	4.48
β Tauri	2	5 18 8.300	+ 3.788	+28 29 44.92	+ 3.47
* Groombridge 966	6.7	5 22 29.668	7.987	+74 57 8.62	3.27
δ Orionis	2	5 25 25.038	3.064	− 0 23 48.63	3.01
α Leporis	3	5 27 2.528	2.646	−17 54 58.73	2.90
ε Orionis	2	5 29 40.096	3.042	− 1 17 11.05	2.65
α Columbæ	2	5 34 58.752	+ 2.172	−34 8 38.82	+ 2.16
α Orionis	var.	5 48 11.316	3.247	+ 7 22 50.78	+ 1.05
*22 Camelopardalis (H.)	5.4	6 4 37.458	6.619	+69 21 37.72	− 0.51
μ Geminorum	3	6 15 9.395	3.633	+22 34 38.57	1.43
α Argus (*Canopus*)	1	6 21 5.411	1.330	−52 37 33.89	1.84
γ Geminorum	2.3	6 30 15.585	+ 3.469	+16 30 25.78	− 2.67
*51 Cephei (H.)	5	6 39 13.322	30.316	+87 14 18.61	3.42
α Canis Maj. (*Sirius*)	1	6 39 27.773	2.645	−16 32 27.02	4.64
ε Canis Majoris	2.1	6 53 33.444	+ 2.358	−28 47 53.06	− 4.64

* Circumpolar Stars.

MEAN PLACES FOR 1871.0. (Jan. 0+^{d}.078, Washington.)

Star's Name.	Magnitude.	Right Ascension.			An. Variation.	Declination.			An. Variation.
		h	m	s	s	°	′	″	″
δ Canis Majoris	2	7	3	8.834	+ 2.440	−26	11	22.53	− 5.42
δ Geminorum	3.4	7	12	25.072	3.591	+22	13	3.49	6.22
* Piazzi vii. 67	6	7	17	26.172	6.314	+68	43	28.68	6.72
α Geminor. (*Castor*)	2.1	7	26	21.690	3.839	+32	10	7.74	7.46
α Can. Min. (*Procyon*)	1	7	32	32.974	3.146	+ 5	33	12.65	8.92
β Geminor. (*Pollux*)	1.2	7	37	25.186	+ 3.682	+28	20	8.29	− 8.31
φ Geminorum	5	7	45	36.039	3.684	+27	5	50.84	8.93
* 3 Ursæ Majoris (H.)	6	7	59	56.698	6.071	+68	50	59.83	10.04
15 Argus (ι)	3	8	2	3.100	2.556	−23	56	1.36	10.11
ε Hydræ	3.4	8	39	56.647	3.184	+ 6	53	26.42	12.91
ι Ursæ Majoris	3	8	50	21.867	+ 4.141	+48	32	45.71	−13.84
*σ^2 Ursæ Majoris	5	8	59	0.544	5.380	+67	39	18.28	14.21
κ Cancri	5	9	0	45.490	3.255	+11	11	9.65	14.21
ι Argus	2	9	13	38.149	1.602	−58	44	1.96	14.93
* 1 Draconis (H.)	4.5	9	18	29.445	9.145	+81	53	35.05	15.27
α Hydræ	2	9	21	14.905	+ 2.950	− 8	6	1.90	−15.39
* *d* Ursæ Majoris	5.4	9	23	1.821	5.432	+70	23	41.53	15.48
θ Ursæ Majoris	3	9	24	12.888	4.052	+52	15	48.92	16.15
ε Leonis	3	9	38	31.542	3.420	+24	22	1.62	16.36
μ Leonis	4	9	45	25.348	3.425	+26	36	48.14	16.74
α Leonis (*Regulus*)	1.2	10	1	30.038	+ 3.203	+12	35	49.06	−17.41
*32 Ursæ Majoris	6	10	8	38.258	4.442	+65	45	1.09	17.77
γ^1 Leonis	2	10	12	51.442	3.318	+20	29	36.20	18.02
* 9 Draconis (H.)	5.4	10	24	3.799	5.314	+76	22	33.45	18.35
ρ Leonis	4	10	26	1.092	3.166	+ 9	58	10.99	18.39
η Argus	2	10	40	3.671	+ 2.309	−59	0	21.49	−18.76
l Leonis	5	10	42	28.494	3.160	+11	13	38.67	18.92
α Ursæ Majoris	2	10	55	44.792	3.762	+62	26	48.06	19.35
δ Leonis	2.3	11	7	14.755	3.202	+21	13	49.11	19.65
δ Crateris	3.4	11	12	53.576	2.996	−14	4	49.96	19.44
τ Leonis	5	11	21	18.202	+ 3.088	+ 3	33	59.64	−19.78
* λ Draconis	3.4	11	23	43.003	3.642	+70	2	32.49	19.86
υ Leonis	5.4	11	30	20.679	3.072	− 0	6	41.53	19.83
β Leonis	2	11	42	28.710	3.066	+15	17	36.22	20.09
γ Ursæ Majoris	2.3	11	47	2.096	3.189	+54	24	43.07	20.02
ο Virginis	4	11	58	38.278	+ 3.060	+ 9	26	59.15	−20.00
* 4 Draconis (H.)	5.4	12	6	7.747	2.909	+78	19	57.89	20.06
* β Chamæleontis	5	12	10	49.272	3.340	−78	35	46.01	20.04
η Virginis	3.4	12	13	18.411	3.068	+ 0	3	1.76	20.03
α^1 Crucis	1	12	19	25.963	3.265	−62	22	58.11	19.93
β Corvi	2.3	12	27	36.879	+ 3.138	−22	40	57.30	−19.95
* κ Draconis	3.4	12	27	57.889	2.602	+70	29	57.16	19.93
*32 Camelop. (H.) (*foll.*)	5.4	12	48	12.365	0.352	+84	6	49.54	19.68
12 Canum Venaticorum	3	12	49	59.417	2.817	+39	0	56.41	19.51
θ Virginis	4.5	13	3	16.381	3.101	− 4	50	57.99	19.32
α Virginis (*Spica*)	1	13	18	23.989	+ 3.153	−10	29	12.97	−18.91
ζ Virginis	3.4	13	28	7.284	3.053	+ 0	3	53.33	18.52
η Ursæ Majoris	2	13	42	27.360	2.374	+49	57	28.36	18.11
η Bootis	3	13	48	32.588	2.859	+19	2	44.28	18.18
β Centauri	1	13	54	44.419	+ 4.162	−59	44	57.27	−17.66

* Circumpolar Stars.

MEAN PLACES FOR 1871.0. (Jan. 0+^{d}.078, Washington.)

Star's Name.	Magnitude.	Right Ascension.			An. Variation.	Declination.			An. Variation.
		h	m	s	s	°	′	″	″
* α Draconis	3.4	14	0	53.888	+ 1.623	+64	59	33.04	−17.36
α Bootis (*Arcturus*)	1	14	9	46.676	+ 2.734	+19	51	19.64	18.89
θ Bootis	4.3	14	20	48.272	+ 2.043	+52	26	52.78	16.78
* 5 Ursæ Minoris	5.4	14	27	49.617	− 0.212	+76	16	8.58	16.05
α^2 Centauri	1	14	30	52.293	+ 4.032	−60	17	54.53	15.04
ε Bootis	2.3	14	39	21.224	2.621	+27	37	10.19	−15.37
α^2 Libræ	2.3	14	43	44.707	+ 3.307	−15	30	13.69	15.21
* β Ursæ Minoris	2	14	51	6.388	− 0.250	+74	40	56.34	14.75
β Bootis	3	14	57	5.208	+ 2.260	+40	54	2.19	14.40
β Libræ	2	15	10	4.055	3.220	− 8	54	17.35	13.55
μ^1 Bootis	4.3	15	19	37.092	+ 2.268	+37	49	51.53	−12.82
* γ^2 Ursæ Minoris	3	15	20	57.076	− 0.147	+72	17	35.33	12.80
α Coronæ Borealis	2	15	29	13.596	+ 2.539	+27	9	2.02	12.34
α Serpentis	2.3	15	37	54.886	+ 2.950	+ 6	50	0.49	11.59
ε Serpentis	3.4	15	44	23.230	+ 2.987	+ 4	52	4.68	11.11
* ζ Ursæ Minoris	4.5	15	48	43.061	− 2.289	+78	11	24.39	−10.87
ε Coronæ Borealis	4	15	52	14.928	+ 2.485	+27	15	11.88	10.64
δ Scorpii	2.3	15	52	42.526	3.536	−22	15	6.42	10.57
β^1 Scorpii	2	15	57	56.310	3.477	−19	27	0.13	10.20
* Groombridge 2320	6.5	16	5	58.595	0.132	+68	9	0.46	9.50
δ Ophiuchi	3	16	7	35.203	3.138	− 3	21	35.30	− 9.57
τ Herculis	3.4	16	15	51.721	1.798	+46	37	18.22	8.78
α Scorpii (*Antares*)	1.2	16	21	30.079	3.669	−26	8	35.05	8.38
η Draconis	3.2	16	22	14.967	+ 0.804	+61	48	24.01	8.23
* A Draconis	5	16	28	14.808	− 0.142	+69	2	49.81	7.78
ζ Ophiuchi	3.2	16	30	3.430	+ 3.298	−10	18	11.45	− 7.62
* α Trianguli Australis	2	16	35	1.838	6.282	−68	47	11.42	7.35
η Herculis	3	16	38	28.444	2.054	+39	10	9.52	7.05
κ Ophiuchi	3.4	16	51	33.739	2.835	+ 9	34	40.37	5.88
d Herculis	5	16	56	50.490	+ 2.209	+33	45	24.92	5.43
* ε Ursæ Minoris	4.5	16	59	16.436	− 6.388	+82	14	43.84	− 5.25
α^1 Herculis	var.	17	8	45.947	+ 2.733	+14	32	22.39	4.40
44 Ophiuchi	5	17	18	29.601	3.659	−24	3	12.07	3.70
β Draconis	3.2	17	27	31.074	1.351	+52	23	51.66	2.84
α Ophiuchi	2	17	28	56.789	+ 2.782	+12	39	22.20	2.92
* ω Draconis	5	17	37	42.543	− 0.355	+68	49	0.58	− 1.66
μ Herculis	3.4	17	41	24.632	+ 2.345	+27	47	53.04	2.35
* ψ^1 Draconis (*pr.*)	4.5	17	44	14.213	− 1.083	+72	12	41.37	1.64
γ Draconis	2.3	17	53	36.795	+ 1.393	+51	30	17.81	0.60
γ^2 Sagittarii	3.4	17	57	31.314	3.852	−30	25	22.00	− 0.44
μ^1 Sagittarii	4	18	6	2.926	3.586	−21	5	23.15	+ 0.53
* σ Octantis	6	18	8	7.996	+109.157	−89	16	42.23	0.71
* δ Ursæ Minoris	4.5	18	13	56.963	−19.404	+86	36	22.58	1.27
η Serpentis	3	18	14	38.048	+ 3.099	− 2	55	47.05	0.61
1 Aquilæ (3 H. Scuti)	4.5	18	28	11.169	3.264	− 8	19	53.92	2.15
α Lyræ (*Vega*)	1	18	32	34.243	2.032	+38	39	54.12	+ 3.12
β Lyræ	var.	18	45	19.026	2.214	+33	12	52.01	3.93
σ Sagittarii	2.3	18	47	15.945	+ 3.724	−26	27	14.09	4.04
* 50 Draconis	6	18	50	31.216	− 1.897	+75	16	48.74	4.44
ζ Aquilæ	3	18	59	28.786	+ 2.755	+13	40	25.86	+ 5.06

* Circumpolar Stars.

MEAN PLACES FOR 1871.0. (Jan. 0+^{d}.078, Washington.)

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ′ ″	″
d Sagittarii	5	19 10 5.153	+ 3.513	−19 10 44.95	+ 6.08
* δ Draconis	3	19 12 31.140	+ 0.034	+67 26 4.13	6.31
* τ Draconis	5	19 18 1.145	− 1.106	+73 6 54.20	6.79
δ Aquilæ	3.4	19 18 59.584	+ 3.024	+ 2 51 35.45	6.87
κ Aquilæ	5	19 29 57.002	3.230	− 7 18 41.96	7.69
γ Aquilæ	3	19 40 7.586	+ 2.853	+10 18 3.05	+ 8.49
α Aquilæ (*Altair*)	1.2	19 44 29.315	+ 2.928	+ 8 31 46.59	9.21
* ε Draconis	4	19 48 35.786	− 0.171	+69 56 20.39	9.15
β Aquilæ	4	19 48 58.563	+ 2.947	+ 6 5 11.62	8.71
* λ Ursæ Minoris	6.7	19 53 17.971	−59.448	+88 55 13.47	9.52
τ Aquilæ	6.5	19 57 50.266	+ 2.933	+ 6 54 57.34	+ 9.88
α² Capricorni	3.4	20 10 53.703	+ 3.333	−12 56 33.17	10.86
* κ Cephei	4.5	20 13 11.217	− 1.893	+77 19 17.13	11.01
α Pavonis	2	20 15 25.980	+ 4.795	−57 8 42.46	11.14
π Capricorni	5	20 19 56.100	3.441	−18 37 56.34	11.47
ε Delphini	4	20 27 2.957	+ 2.866	+10 51 59.64	+11.98
* Groombridge 3241	6.7	20 30 32.725	− 0.208	+72 5 40.43	12.22
α Cygni	2.1	20 37 2.060	+ 2.044	+44 49 13.41	12.69
μ Aquarii	5.4	20 45 41.615	3.240	− 9 27 55.11	13.25
ν Cygni	4	20 52 21.846	+ 2.234	+40 40 18.96	13.71
* 12 Year Cat. 1879	6	20 53 21.553	− 2.492	+80 4 0.68	+13.71
61 Cygni (*pr.*)	5.6	21 1 6.984	+ 2.687	+38 6 59.26	17.49
ζ Cygni	3	21 7 26.777	2.550	+29 41 56.66	14.58
α Cephei	3.2	21 15 29.953	1.437	+62 2 21.10	15.11
1 Pegasi	4.5	21 16 7.313	2.774	+19 15 15.05	15.23
β Aquarii	3	21 24 45.997	+ 3.164	− 6 8 13.25	+15.64
* β Cephei	3	21 26 59.160	0.800	+69 59 39.78	15.71
ξ Aquarii	5.4	21 30 52.965	3.198	− 8 25 52.26	15.94
ε Pegasi	2.3	21 37 51.028	2.948	+ 9 17 5.70	16.33
* 11 Cephei	5	21 40 1.455	0.907	+70 43 3.03	16.50
μ Capricorni	5	21 46 15.656	+ 3.279	−14 9 26.22	+16.77
* 79 Draconis	6.7	21 51 15.703	0.738	+73 5 31.36	16.96
α Aquarii	3	21 59 9.445	3.084	− 0 56 43.32	17.33
α Gruis	2	22 0 5.559	3.814	−47 35 2.79	17.19
θ Aquarii	4.5	22 10 1.509	3.170	− 8 25 28.20	17.78
π Aquarii	5.4	22 18 41.309	+ 3.065	+ 0 43 25.57	+18.13
η Aquarii	4.3	22 28 43.603	3.084	− 0 46 53.27	18.44
*226 Cephei (B.)	5.6	22 30 0.010	1.084	+75 33 41.82	18.52
ζ Pegasi	3.4	22 35 1.661	2.988	+10 9 32.16	18.70
* ι Cephei	4.3	22 45 5.525	2.118	+65 31 19.91	18.85
λ Aquarii	4	22 45 52.952	+ 3.131	− 8 15 54.40	+19.07
α Pis. Aus. (*Fomalhaut*)	1.2	22 50 31.060	3.330	−30 18 18.17	18.98
α Pegasi (*Markab*)	2	22 58 20.165	2.984	+14 30 43.04	19.31
* ο Cephei	6.5	23 13 20.300	2.436	+67 24 20.16	19.62
θ Piscium	4.5	23 21 25.458	3.041	+ 5 40 15.69	19.75
ι Piscium	4.5	23 33 18.989	+ 3.084	+ 4 55 38.94	+19.48
* γ Cephei	3.4	23 34 4.198	2.402	+76 54 44.85	20.07
* Groombridge 4163	7	23 48 34.925	2.848	+73 41 32.28	20.00
ω Piscium	4	23 52 41.284	+ 3.078	+ 6 8 57.57	+19.94

* Circumpolar Stars.

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*), FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North*
	h m 1 11	° ′ 88 37		h m 1 10	° ′ 88 37		h m 1 10	° ′ 88 37		h m 1 10	° ′ 88 37
	s	″		s	″		s	″		s	″
0.3	44.89	30.7	1.2	76.25	30.9	1.1	55.43	26.0	1.0	44.55	17.2
1.3	44.10	30.8	2.2	75.30	30.8	2.1	54.81	25.8	2.0	44.36	16.9
2.3	43.32	30.9	3.2	74.48	30.8	3.1	54.18	25.6	3.0	44.23	16.5
3.3	42.52	31.0	4.2	73.54	30.7	4.1	53.52	25.3	4.0	44.15	16.2
4.3	41.69	31.1	5.2	72.59	30.6	5.1	52.88	25.1	5.0	44.14	15.8
5.3	40.81	31.3	6.2	71.64	30.4	6.1	52.27	24.8	6.0	44.20	15.5
6.3	39.87	31.4	7.2	70.73	30.3	7.1	51.71	24.5	7.0	44.31	15.2
7.2	38.90	31.5	8.2	69.86	30.1	8.1	51.21	24.2	8.0	44.45	14.9
8.2	37.88	31.5	9.2	69.05	29.9	9.1	50.77	23.9	9.0	44.61	14.6
9.2	36.86	31.6	10.2	68.31	29.7	10.1	50.41	23.6	10.0	44.74	14.3
10.2	35.83	31.6	11.2	67.60	29.6	11.1	50.07	23.3	11.0	44.85	14.0
11.2	34.85	31.6	12.2	66.93	29.4	12.1	49.76	23.0	12.0	44.91	13.8
12.2	33.90	31.6	13.1	66.25	29.3	13.1	49.44	22.7	13.0	44.95	13.5
13.2	33.01	31.6	14.1	65.56	29.1	14.1	49.11	22.5	14.0	44.98	13.2
14.2	32.17	31.6	15.1	64.84	29.0	15.1	48.73	22.3	15.0	45.00	12.9
15.2	31.35	31.6	16.1	64.07	28.8	16.1	48.33	22.0	16.0	45.07	12.6
16.2	30.53	31.6	17.1	63.27	28.7	17.1	47.89	21.7	17.0	45.18	12.3
17.2	29.71	31.6	18.1	62.45	28.5	18.1	47.45	21.4	18.0	45.36	11.9
18.2	28.85	31.7	19.1	61.63	28.3	19.1	47.03	21.1	19.0	45.61	11.6
19.2	27.95	31.7	20.1	60.82	28.1	20.1	46.64	20.8	20.0	45.92	11.3
20.2	26.99	31.7	21.1	60.06	27.9	21.1	46.32	20.5	21.0	46.26	11.0
21.2	25.99	31.7	22.1	59.35	27.6	22.0	46.06	20.2	22.0	46.63	10.7
22.2	24.97	31.7	23.1	58.70	27.4	23.0	45.86	19.8	23.0	47.00	10.4
23.2	23.95	31.7	24.1	58.11	27.1	24.0	45.73	19.5	24.0	47.34	10.2
24.2	22.95	31.6	25.1	57.57	26.9	25.0	45.62	19.2	25.0	47.66	9.9
25.2	21.98	31.5	26.1	57.05	26.6	26.0	45.52	18.9	25.9	47.95	9.7
26.2	21.08	31.4	27.1	56.53	26.4	27.0	45.42	18.6	26.9	48.21	9.4
27.2	20.21	31.3	28.1	56.00	26.2	28.0	45.30	18.3	27.9	48.45	9.1
28.2	19.42	31.2	29.1	55.43	26.0	29.0	45.14	18.1	28.9	48.69	8.9
29.2	18.63	31.1	30.1	54.81	25.8	30.0	44.95	17.8	29.9	48.98	8.6
30.2	17.86	31.0	31.1	54.18	25.6	31.0	44.75	17.5	30.9	49.32	8.3
31.2	17.07	31.0	32.1	53.52	25.3	32.0	44.55	17.2	31.9	49.73	8.0

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*), FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	$1^{h}\ 10^{m}$	$88^{\circ}\ 37'$		$1^{h}\ 11^{m}$	$88^{\circ}\ 37'$		$1^{h}\ 11^{m}$	$88^{\circ}\ 37'$		$1^{h}\ 12^{m}$	$88^{\circ}\ 37'$
	s	″		s	″		s	″		s	″
1.9	49.73	8.0	1.9	8.86	1.8	1.8	34.34	0.5	1.7	0.83	4.2
2.9	50.20	7.7	2.8	9.74	1.7	2.8	35.21	0.5	2.7	1.53	4.4
3.9	50.74	7.4	3.8	10.58	1.6	3.8	36.03	0.6	3.7	2.24	4.6
4.9	51.29	7.2	4.8	11.38	1.5	4.8	36.82	0.7	4.7	2.99	4.8
5.9	51.87	6.9	5.8	12.13	1.4	5.8	37.59	0.8	5.7	3.78	5.0
6.9	52.44	6.7	6.8	12.85	1.4	6.8	38.37	0.8	6.7	4.61	5.2
7.9	52.97	6.5	7.8	13.54	1.3	7.8	39.19	0.8	7.7	5.48	5.3
8.9	53.48	6.3	8.8	14.24	1.2	8.7	40.05	0.9	8.7	6.36	5.6
9.9	53.94	6.1	9.8	14.96	1.1	9.7	40.96	0.9	9.7	7.22	5.8
10.9	54.39	5.9	10.8	15.72	0.9	10.7	41.92	1.0	10.7	8.05	6.1
11.9	54.83	5.7	11.8	16.55	0.8	11.7	42.90	1.0	11.7	8.84	6.4
12.9	55.28	5.4	12.8	17.41	0.7	12.7	43.89	1.1	12.7	9.57	6.6
13.9	55.76	5.2	13.8	18.34	0.6	13.7	44.87	1.2	13.7	10.24	6.9
14.9	56.30	5.0	14.8	19.28	0.6	14.7	45.82	1.4	14.6	10.87	7.2
15.9	56.91	4.7	15.8	20.23	0.5	15.7	46.71	1.5	15.6	11.47	7.4
16.9	57.57	4.5	16.8	21.17	0.5	16.7	47.54	1.7	16.6	12.07	7.7
17.9	58.29	4.3	17.8	22.08	0.5	17.7	48.34	1.8	17.6	12.70	7.9
18.9	59.03	4.0	18.8	22.94	0.5	18.7	49.10	2.0	18.6	13.35	8.2
19.9	59.77	3.9	19.8	23.75	0.5	19.7	49.85	2.1	19.6	14.05	8.4
20.9	60.50	3.7	20.8	24.52	0.5	20.7	50.62	2.2	20.6	14.80	8.6
21.9	61.19	3.6	21.8	25.28	0.5	21.7	51.42	2.3	21.6	15.57	8.9
22.9	61.83	3.4	22.8	26.04	0.4	22.7	52.26	2.4	22.6	16.34	9.2
23.9	62.44	3.3	23.8	26.83	0.4	23.7	53.14	2.5	23.6	17.09	9.5
24.9	63.03	3.1	24.8	27.67	0.4	24.7	54.08	2.7	24.6	17.80	9.8
25.9	63.62	2.9	25.8	28.55	0.3	25.7	55.02	2.8	25.6	18.47	10.1
26.9	64.22	2.8	26.8	29.49	0.3	26.7	55.97	3.0	26.6	19.07	10.5
27.9	64.87	2.6	27.8	30.46	0.3	27.7	56.90	3.2	27.6	19.62	10.8
28.9	65.56	2.4	28.8	31.46	0.3	28.7	57.79	3.4	28.6	20.12	11.1
29.9	66.32	2.2	29.8	32.44	0.3	29.7	58.62	3.6	29.6	20.59	11.4
30.9	67.14	2.1	30.8	33.41	0.4	30.7	59.40	3.8	30.6	21.08	11.7
31.9	67.99	1.9	31.8	34.34	0.5	31.7	60.13	4.0	31.6	21.59	12.0
32.9	68.86	1.8	32.8	35.21	0.5	32.7	60.83	4.2	32.6	22.13	12.3

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*), FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 1 12	° ′ 88 37		h m 1 12	° ′ 88 37		h m 1 12	° ′ 88 37		h m 1 11	° ′ 88 37
	s	″		s	″		s	″		s	″
1.6	22.13	12.3	1.5	34.02	22.9	1.4	34.09	34.8	1.3	80.98	44.9
2.6	22.72	12.6	2.5	34.34	23.3	2.4	33.86	35.2	2.3	80.24	45.2
3.6	23.34	12.9	3.5	34.63	23.7	3.4	33.56	35.6	3.3	79.48	45.4
4.6	23.98	13.2	4.5	34.88	24.1	4.4	33.20	36.0	4.3	78.73	45.7
5.6	24.62	13.5	5.5	35.05	24.5	5.4	32.81	36.4	5.3	78.00	45.9
6.6	25.24	13.9	6.5	35.17	24.9	6.4	32.41	36.7	6.3	77.31	46.1
7.6	25.79	14.2	7.5	35.24	25.3	7.4	32.02	37.1	7.3	76.65	46.3
8.6	26.29	14.6	8.5	35.26	25.7	8.4	31.66	37.4	8.3	76.04	46.6
9.6	26.73	15.0	9.5	35.25	26.1	9.4	31.33	37.7	9.3	75.42	46.8
10.6	27.11	15.4	10.5	35.23	26.5	10.4	31.05	38.0	10.3	74.81	47.0
11.6	27.45	15.7	11.5	35.25	26.9	11.4	30.79	38.4	11.3	74.17	47.3
12.6	27.78	16.1	12.5	35.28	27.2	12.4	30.54	38.7	12.3	73.49	47.6
13.6	28.12	16.4	13.5	35.36	27.6	13.4	30.25	39.1	13.3	72.73	47.8
14.6	28.50	16.7	14.5	35.48	27.9	14.4	29.91	39.4	14.3	71.92	48.1
15.6	28.91	17.0	15.5	35.60	28.3	15.4	29.54	39.8	15.3	71.04	48.3
16.6	29.35	17.3	16.5	35.72	28.7	16.4	29.09	40.2	16.3	70.15	48.5
17.6	29.84	17.7	17.5	35.81	29.1	17.4	28.59	40.6	17.3	69.25	48.7
18.6	30.32	18.0	18.5	35.85	29.5	18.4	28.03	40.9	18.3	68.37	48.9
19.6	30.79	18.4	19.5	35.83	29.9	19.4	27.44	41.2	19.3	67.53	49.0
20.5	31.23	18.8	20.5	35.75	30.3	20.4	26.85	41.5	20.3	66.72	49.2
21.5	31.61	19.2	21.5	35.61	30.8	21.4	26.28	41.8	21.3	65.95	49.3
22.5	31.94	19.6	22.5	35.42	31.2	22.4	25.74	42.1	22.3	65.22	49.5
23.5	32.20	20.0	23.5	35.22	31.5	23.4	25.25	42.4	23.3	64.49	49.6
24.5	32.41	20.4	24.5	35.02	31.9	24.4	24.79	42.7	24.3	63.74	49.8
25.5	32.59	20.8	25.5	34.83	32.2	25.4	24.35	43.0	25.3	62.97	50.0
26.5	32.76	21.1	26.4	34.70	32.6	26.4	23.91	43.3	26.3	62.15	50.2
27.5	32.94	21.5	27.4	34.58	32.9	27.4	23.44	43.6	27.3	61.28	50.3
28.5	33.15	21.8	28.4	34.52	33.3	28.4	22.92	43.9	28.3	60.35	50.5
29.5	33.41	22.2	29.4	34.44	33.6	29.4	22.32	44.2	29.3	59.38	50.7
30.5	33.70	22.5	30.4	34.36	34.0	30.4	21.67	44.6	30.3	58.39	50.8
31.5	34.02	22.9	31.4	34.25	34.4	31.3	20.98	44.9	31.3	57.39	50.9
32.5	34.34	23.3	32.4	34.09	34.8	32.3	20.24	45.2	32.3	56.43	51.0

APPARENT PLACES OF 51 CEPHEI, (Hev.) FOR THE UPPER TRANSIT AT WASHINGTON

Mean [illegible] Date	JANUARY Right Ascension	JANUARY Declination North	Mean [illegible] Date	FEBRUARY Right Ascension	FEBRUARY Declination North	Mean [illegible] Date	MARCH Right Ascension	MARCH Declination North	Mean [illegible] Date	APRIL Right Ascension	APRIL Declination North
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
	6 30	87 14		6 30	87 14		6 30	87 14		6 [illegible]	87 14
	s	″		s	″		s	″		s	″
0.5	30.96	17.6	1.4	[illegible]	27.8	1.3	21.64	34.4	1.2	[illegible]	[illegible]
1.5	31.03	17.9	2.4	[illegible]	28.1	2.3	21.32	34.6	2.2	[illegible]	[illegible]
2.5	31.14	18.2	3.4	[illegible]	28.4	3.3	[illegible]	34.8	3.2	[illegible]	[illegible]
3.5	31.25	18.5	4.4	29.14	28.7	4.3	[illegible]	[illegible]	4.2	[illegible]	[illegible]
4.5	31.37	18.8	5.4	[illegible]	29.0	5.3	20.20	[illegible]	5.2	[illegible]	[illegible]
5.5	31.49	19.1	6.4	[illegible]	29.3	6.3	19.76	[illegible]	6.2	[illegible]	[illegible]
6.5	[illegible]	19.5	7.4	[illegible]	29.6	7.3	19.32	[illegible]	7.2	[illegible]	[illegible]
7.5	[illegible]	19.8	8.4	28.11	29.9	8.3	18.87	[illegible]	8.2	[illegible]	[illegible]
8.5	31.71	20.2	9.4	[illegible]	30.2	9.3	18.43	[illegible]	9.2	[illegible]	[illegible]
9.5	31.74	20.6	10.4	27.51	30.4	10.3	[illegible]	[illegible]	10.2	[illegible]	[illegible]
10.5	[illegible]	[illegible]	11.4	[illegible]	30.6	11.3	[illegible]	[illegible]	11.2	[illegible]	[illegible]
11.5	[illegible]	21.3	12.4	[illegible]	[illegible]	12.3	17.21	[illegible]	12.2	[illegible]	[illegible]
12.5	[illegible]	21.6	13.4	26.74	31.0	13.3	[illegible]	[illegible]	13.2	[illegible]	[illegible]
13.5	[illegible]	[illegible]	14.4	[illegible]	31.3	14.3	[illegible]	[illegible]	14.2	[illegible]	[illegible]
14.5	[illegible]	[illegible]	15.4	[illegible]	31.5	15.3	16.13	[illegible]	15.2	[illegible]	[illegible]
15.5	31.41	[illegible]	16.4	[illegible]	31.8	16.3	[illegible]	[illegible]	16.2	[illegible]	[illegible]
16.5	[illegible]	[illegible]	17.4	[illegible]	32.0	17.3	[illegible]	[illegible]	17.2	[illegible]	[illegible]
17.4	[illegible]	23.1	18.4	[illegible]	32.3	18.3	14.91	[illegible]	18.2	[illegible]	[illegible]
18.4	[illegible]	[illegible]	19.4	[illegible]	[illegible]	19.3	[illegible]	[illegible]	19.2	[illegible]	[illegible]
19.4	[illegible]	[illegible]	20.4	[illegible]	[illegible]	20.3	[illegible]	[illegible]	20.2	[illegible]	[illegible]
20.4	[illegible]	24.1	21.4	[illegible]	33.1	21.3	[illegible]	[illegible]	21.2	[illegible]	[illegible]
21.4	[illegible]	24.4	22.4	[illegible]	33.3	22.3	[illegible]	[illegible]	22.2	[illegible]	[illegible]
22.4	[illegible]	[illegible]	23.3	[illegible]	[illegible]	23.3	[illegible]	[illegible]	23.2	[illegible]	[illegible]
23.4	[illegible]	[illegible]	24.3	[illegible]	[illegible]	24.3	[illegible]	[illegible]	24.2	[illegible]	[illegible]
24.4	[illegible]	[illegible]	25.3	[illegible]	[illegible]	25.3	11.78	[illegible]	25.2	[illegible]	[illegible]
25.4	[illegible]	[illegible]	26.3	[illegible]	[illegible]	26.3	[illegible]	[illegible]	26.2	[illegible]	[illegible]
26.4	[illegible]	[illegible]	27.3	[illegible]	34.1	27.3	[illegible]	[illegible]	27.2	[illegible]	[illegible]
27.4	[illegible]	[illegible]	28.3	[illegible]	[illegible]	28.3	[illegible]	[illegible]	28.2	[illegible]	[illegible]
28.4	[illegible]	[illegible]	29.3	[illegible]	34.4	29.3	[illegible]	[illegible]	29.2	[illegible]	[illegible]
29.4	[illegible]	[illegible]	30.3	[illegible]	34.4	30.3	[illegible]	[illegible]	30.2	[illegible]	[illegible]
30.4	[illegible]	[illegible]	31.3	[illegible]	[illegible]	31.2	[illegible]	[illegible]	31.2	[illegible]	[illegible]
31.4	[illegible]	[illegible]	32.3	[illegible]	[illegible]	32.2	[illegible]	[illegible]	32.2	[illegible]	[illegible]

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 18 13	° ′ 86 36		h m 18 13	° ′ 86 36		h m 18 13	° ′ 86 36		h m 18 14	° ′ 86 36
	s	″		s	″		s	″		s	″
1.0	40.72	21.8	1.9	43.79	11.4	1.8	51.53	5.2	1.7	2.46	3.7
2.0	40.71	21.5	2.9	43.97	11.1	2.8	51.84	5.1	2.7	2.84	3.7
3.0	40.69	21.2	3.9	44.17	10.8	3.8	52.17	4.9	3.7	3.23	3.7
4.0	40.66	20.8	4.9	44.39	10.5	4.8	52.52	4.7	4.7	3.60	3.8
5.0	40.63	20.5	5.9	44.64	10.2	5.8	52.88	4.6	5.7	3.98	3.9
6.0	40.61	20.1	6.9	44.89	9.9	6.8	53.25	4.5	6.7	4.34	4.0
7.0	40.60	19.8	7.9	45.17	9.6	7.8	53.63	4.4	7.7	4.67	4.2
8.0	40.62	19.4	8.9	45.44	9.3	8.8	54.01	4.3	8.7	5.00	4.3
9.0	40.68	19.0	9.9	45.72	9.1	9.8	54.38	4.2	9.7	5.31	4.4
10.0	40.75	18.6	10.9	45.99	8.9	10.8	54.75	4.1	10.7	5.61	4.5
11.0	40.84	18.2	11.9	46.25	8.7	11.8	55.09	4.1	11.7	5.91	4.6
11.9	40.94	17.9	12.9	46.50	8.5	12.8	55.43	4.0	12.7	6.21	4.7
12.9	41.05	17.6	13.9	46.74	8.3	13.8	55.74	4.0	13.7	6.53	4.8
13.9	41.14	17.3	14.9	46.98	8.1	14.8	56.07	3.9	14.7	6.86	4.9
14.9	41.23	17.0	15.9	47.22	7.8	15.8	56.39	3.8	15.7	7.20	4.9
15.9	41.31	16.7	16.9	47.48	7.6	16.8	56.73	3.8	16.7	7.55	5.1
16.9	41.39	16.4	17.8	47.75	7.4	17.8	57.07	3.7	17.7	7.91	5.2
17.9	41.47	16.1	18.8	48.04	7.1	18.8	57.44	3.6	18.7	8.25	5.4
18.9	41.54	15.7	19.8	48.35	6.9	19.8	57.83	3.5	19.7	8.58	5.5
19.9	41.63	15.4	20.8	48.68	6.6	20.8	58.22	3.5	20.7	8.89	5.7
20.9	41.74	15.0	21.8	49.02	6.4	21.8	58.62	3.5	21.7	9.18	5.9
21.9	41.86	14.7	22.8	49.36	6.3	22.8	59.01	3.5	22.7	9.45	6.1
22.9	42.01	14.3	23.8	49.71	6.1	23.8	59.39	3.5	23.7	9.71	6.3
23.9	42.17	14.0	24.8	50.03	6.0	24.8	59.75	3.5	24.7	9.96	6.5
24.9	42.36	13.6	25.8	50.34	5.8	25.7	60.09	3.6	25.7	10.21	6.7
25.9	42.55	13.3	26.8	50.64	5.7	26.7	60.43	3.6	26.7	10.47	6.8
26.9	42.75	13.0	27.8	50.94	5.6	27.7	60.74	3.6	27.7	10.73	7.0
27.9	42.94	12.8	28.8	51.24	5.4	28.7	61.07	3.7	28.7	11.01	7.1
28.9	43.13	12.5	29.8	51.53	5.2	29.7	61.40	3.7	29.7	11.31	7.3
29.9	43.30	12.2	30.8	51.84	5.1	30.7	61.73	3.6	30.7	11.60	7.5
30.9	43.46	12.0	31.8	52.17	4.9	31.7	62.09	3.7	31.6	11.90	7.7
31.9	43.63	11.7	32.8	52.52	4.7	32.7	62.46	3.7	32.6	12.18	7.9

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON

Mean Solar Date	MAY. Right Ascension.	MAY. Declination North.	Mean Solar Date	JUNE. Right Ascension.	JUNE. Declination North.	Mean Solar Date.	JULY. Right Ascension.	JULY. Declination North.	Mean Solar Date	AUGUST. Right Ascension.	AUGUST. Declination North.
	h m 18 14	° ′ 86 36		h m 18 14	° ′ 86 36		h m 18 14	° ′ 86 36		h m 18 13	° ′ [illegible]
	s	″		s	″		s	″		s	″
1.6	11.90	7.7	1.6	17.[illegible]	16.0	1.5	16.65	25.4	1.4	[illegible]	[illegible]
2.6	12.18	7.9	2.6	17.[illegible]	16.4	2.5	16.50	25.7	2.4	[illegible]	[illegible]
3.6	12.45	8.2	3.6	17.33	16.7	3.5	16.36	26.0	3.4	[illegible]	[illegible]
4.6	12.69	8.5	4.6	17.35	17.0	4.5	16.21	26.2	4.4	[illegible]	[illegible]
5.6	12.92	8.7	5.6	17.3[illegible]	17.3	5.5	16.07	26.5	5.4	[illegible]	[illegible]
6.6	13.12	9.0	6.6	17.41	17.6	6.5	15.[illegible]	[illegible]	6.4	[illegible]	[illegible]
7.6	13.31	9.2	7.5	17.45	17.8	7.5	15.[illegible]	27.1	7.4	[illegible]	[illegible]
8.6	13.50	9.4	8.5	17.50	18.1	8.5	15.73	27.3	8.4	[illegible]	[illegible]
9.6	13.[illegible]	9.7	9.5	17.56	18.4	9.5	15.60	27.7	9.4	[illegible]	[illegible]
10.6	[illegible]	9.9	10.5	17.61	18.7	10.5	15.47	28.0	10.4	[illegible]	[illegible]
11.6	14.0[illegible]	10.1	11.5	17.66	19.0	11.5	15.31	28.3	11.4	[illegible]	[illegible]
12.6	14.31	10.3	12.5	17.70	19.3	12.5	15.13	[illegible]	12.4	[illegible]	[illegible]
13.6	14.54	10.5	13.5	17.71	19.7	13.4	14.[illegible]	[illegible]	13.4	[illegible]	[illegible]
14.6	14.76	10.8	14.5	17.74	20.0	14.4	14.71	[illegible]	14.4	[illegible]	[illegible]
15.6	14.[illegible]	11.0	15.5	17.7[illegible]	20.4	15.4	14.[illegible]	[illegible]	15.4	[illegible]	[illegible]
16.6	15.1[illegible]	11.3	16.5	17.67	20.7	16.4	14.35	[illegible]	16.4	[illegible]	[illegible]
17.6	15.[illegible]	11.7	17.5	17.[illegible]	21.1	17.4	14.[illegible]	[illegible]	17.4	[illegible]	[illegible]
18.6	15.[illegible]	12.0	18.5	17.[illegible]	21.4	18.4	[illegible]	[illegible]	18.4	[illegible]	[illegible]
19.6	[illegible]	[illegible]	19.5	17.[illegible]	[illegible]	19.4	[illegible]	[illegible]	19.3	[illegible]	[illegible]
20.6	15.[illegible]	12.6	20.5	17.[illegible]	[illegible]	20.4	[illegible]	[illegible]	20.3	[illegible]	[illegible]
21.6	[illegible]	[illegible]	21.5	17.[illegible]	[illegible]	21.4	[illegible]	[illegible]	21.3	[illegible]	[illegible]
22.6	[illegible]	13.1	22.5	17.[illegible]	[illegible]	22.4	[illegible]	[illegible]	22.3	[illegible]	[illegible]
23.6	[illegible]	13.4	23.5	17.[illegible]	[illegible]	23.4	[illegible]	[illegible]	23.3	[illegible]	[illegible]
24.6	[illegible]	[illegible]	24.5	17.[illegible]	[illegible]	24.4	[illegible]	[illegible]	24.3	[illegible]	[illegible]
25.6	[illegible]	[illegible]	25.5	17.[illegible]	[illegible]	25.4	[illegible]	[illegible]	25.3	[illegible]	[illegible]
26.6	[illegible]	14.1	26.5	17.[illegible]	[illegible]	26.4	[illegible]	[illegible]	26.3	[illegible]	[illegible]
27.6	[illegible]	14.4	27.5	17.[illegible]	[illegible]	27.4	[illegible]	[illegible]	27.3	[illegible]	[illegible]
28.6	[illegible]	14.7	28.5	17.[illegible]	[illegible]	28.4	[illegible]	[illegible]	28.3	[illegible]	[illegible]
29.6	[illegible]	[illegible]	29.5	[illegible]	[illegible]	29.4	[illegible]	[illegible]	29.3	[illegible]	[illegible]
30.6	[illegible]	[illegible]	30.5	[illegible]	[illegible]	30.4	[illegible]	[illegible]	30.3	[illegible]	[illegible]
31.6	[illegible]	[illegible]	31.5	[illegible]	[illegible]	31.4	[illegible]	[illegible]	31.3	[illegible]	[illegible]
32.6	17.63	[illegible]	32.5	[illegible]	[illegible]	32.4	[illegible]	[illegible]	32.3	[illegible]	[illegible]

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.
	h m 18 13	° ′ 86 36		h m 18 13	° ′ 86 36		h m 18 13	° ′ 86 36		h m 18 13	° ′ 86 36
	s	″		s	″		s	″		s	″
1.3	59.68	39.4	1.2	47.11	40.9	1.1	34.30	37.7	1.1	24.90	30.4
2.3	59.31	39.6	2.2	46.68	40.9	2.1	33.89	37.6	2.1	24.65	30.0
3.3	58.93	39.7	3.2	46.23	40.9	3.1	33.49	37.3	3.1	24.44	29.7
4.3	58.54	39.8	4.2	45.77	40.9	4.1	33.10	37.1	4.1	24.25	29.3
5.3	58.13	40.0	5.2	45.30	40.8	5.1	32.74	36.9	5.1	24.07	29.0
6.3	57.70	40.1	6.2	44.84	40.8	6.1	32.40	36.6	6.1	23.91	28.7
7.3	57.26	40.2	7.2	44.38	40.7	7.1	32.06	36.4	7.0	23.75	28.4
8.3	56.81	40.3	8.2	43.94	40.6	8.1	31.75	36.2	8.0	23.58	28.1
9.3	56.37	40.4	9.2	43.53	40.5	9.1	31.43	36.0	9.0	23.40	27.8
10.3	55.94	40.4	10.2	43.13	40.4	10.1	31.12	35.8	10.0	23.21	27.5
11.3	55.51	40.4	11.2	42.73	40.3	11.1	30.80	35.6	11.0	23.02	27.2
12.3	55.10	40.5	12.2	42.33	40.2	12.1	30.46	35.4	12.0	22.81	26.9
13.3	54.71	40.5	13.2	41.95	40.1	13.1	30.11	35.2	13.0	22.62	26.6
14.3	54.32	40.6	14.2	41.55	40.1	14.1	29.75	35.0	14.0	22.44	26.2
15.3	53.94	40.6	15.2	41.14	40.0	15.1	29.40	34.8	15.0	22.28	25.9
16.3	53.55	40.7	16.2	40.72	40.0	16.1	29.04	34.5	16.0	22.14	25.5
17.3	53.15	40.8	17.2	40.28	39.9	17.1	28.71	34.2	17.0	22.02	25.1
18.3	52.72	40.9	18.2	39.84	39.8	18.1	28.38	34.0	18.0	21.93	24.8
19.3	52.29	40.9	19.2	39.39	39.7	19.1	28.08	33.7	19.0	21.84	24.4
20.3	51.83	41.0	20.2	38.95	39.5	20.1	27.81	33.4	20.0	21.77	24.1
21.3	51.38	41.0	21.2	38.53	39.4	21.1	27.55	33.1	21.0	21.70	23.8
22.3	50.90	41.0	22.2	38.11	39.2	22.1	27.30	32.8	22.0	21.63	23.5
23.3	50.44	41.0	23.2	37.72	39.0	23.1	27.05	32.6	23.0	21.54	23.2
24.3	49.98	41.0	24.2	37.34	38.9	24.1	26.81	32.3	24.0	21.44	22.8
25.2	49.55	41.0	25.2	36.98	38.7	25.1	26.55	32.1	25.0	21.34	22.5
26.2	49.14	40.9	26.2	36.62	38.6	26.1	26.28	31.8	26.0	21.23	22.2
27.2	48.74	40.9	27.2	36.26	38.4	27.1	26.00	31.6	27.0	21.14	21.8
28.2	48.33	40.9	28.2	35.89	38.3	28.1	25.72	31.3	28.0	21.06	21.5
29.2	47.94	40.9	29.2	35.51	38.2	29.1	25.44	31.0	29.0	21.00	21.1
30.2	47.52	40.9	30.2	35.12	38.0	30.1	25.16	30.7	30.0	20.96	20.7
31.2	47.11	40.9	31.2	34.71	37.9	31.1	24.90	30.4	31.0	20.95	20.3
32.2	46.68	40.9	32.1	34.30	37.7	32.1	24.65	30.0	32.0	20.96	19.9

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 18 14	° ′ 86 36		h m 18 14	° ′ 86 36		h m 18 14	° ′ 86 36		h m 18 13	° ′ 86 36
	s	″		s	″		s	″		s	″
1.6	11.90	7.7	1.6	17.23	16.0	1.5	16.66	25.4	1.4	70.32	33.9
2.6	12.18	7.9	2.6	17.29	16.4	2.5	16.50	25.7	2.4	70.05	34.1
3.6	12.45	8.2	3.6	17.33	16.7	3.5	16.36	26.0	3.4	69.79	34.3
4.6	12.69	8.5	4.6	17.35	17.0	4.5	16.21	26.2	4.4	69.53	34.5
5.6	12.92	8.7	5.6	17.38	17.3	5.5	16.07	26.5	5.4	69.27	34.8
6.6	13.12	9.0	6.6	17.41	17.6	6.5	15.95	26.8	6.4	68.99	35.0
7.6	13.31	9.2	7.5	17.45	17.8	7.5	15.84	27.1	7.4	68.70	35.3
8.6	13.50	9.4	8.5	17.50	18.1	8.5	15.73	27.3	8.4	68.39	35.5
9.6	13.69	9.7	9.5	17.55	18.4	9.5	15.60	27.7	9.4	68.05	35.7
10.6	13.88	9.9	10.5	17.61	18.7	10.5	15.47	28.0	10.4	67.71	36.0
11.6	14.09	10.1	11.5	17.66	19.0	11.5	15.31	28.3	11.4	67.35	36.2
12.6	14.31	10.3	12.5	17.70	19.3	12.5	15.13	28.6	12.4	66.99	36.4
13.6	14.54	10.5	13.5	17.73	19.7	13.4	14.93	29.0	13.4	66.63	36.6
14.6	14.76	10.8	14.5	17.74	20.0	14.4	14.71	29.3	14.4	66.27	36.7
15.6	14.99	11.0	15.5	17.72	20.4	15.4	14.49	29.6	15.4	65.93	36.9
16.6	15.19	11.3	16.5	17.67	20.7	16.4	14.25	29.8	16.4	65.60	37.0
17.6	15.38	11.7	17.5	17.62	21.1	17.4	14.03	30.1	17.4	65.28	37.2
18.6	15.54	12.0	18.5	17.55	21.4	18.4	13.81	30.3	18.4	64.97	37.4
19.6	15.68	12.3	19.5	17.49	21.6	19.4	13.60	30.6	19.3	64.64	37.6
20.6	15.80	12.6	20.5	17.43	21.9	20.4	13.40	30.8	20.3	64.31	37.8
21.6	15.91	12.9	21.5	17.38	22.2	21.4	13.20	31.0	21.3	63.96	38.0
22.6	16.02	13.1	22.5	17.35	22.5	22.4	13.01	31.3	22.3	63.58	38.2
23.6	16.13	13.4	23.5	17.31	22.8	23.4	12.81	31.6	23.3	63.20	38.3
24.6	16.26	13.6	24.5	17.29	23.1	24.4	12.59	31.9	24.3	62.79	38.5
25.6	16.40	13.9	25.5	17.25	23.4	25.4	12.35	32.2	25.3	62.37	38.7
26.6	16.54	14.1	26.5	17.20	23.7	26.4	12.09	32.5	26.3	61.96	38.8
27.6	16.68	14.4	27.5	17.14	24.1	27.4	11.81	32.8	27.3	61.55	38.9
28.6	16.81	14.7	28.5	17.05	24.4	28.4	11.51	33.0	28.3	61.15	39.0
29.6	16.95	15.0	29.5	16.93	24.8	29.4	11.21	33.3	29.3	60.77	39.1
30.6	17.06	15.4	30.5	16.80	25.1	30.4	10.91	33.5	30.3	60.40	39.2
31.6	17.16	15.7	31.5	16.66	25.4	31.4	10.61	33.7	31.3	60.04	39.3
32.6	17.23	16.0	32.5	16.50	25.7	32.4	10.32	33.9	32.3	59.68	39.4

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 19 53	° ′ 88 54		h m 19 54	° ′ 88 55		h m 19 54	° ′ 88 55		h m 19 53	° ′ 88 55
	s	″		s	″		s	″		s	″
1.7	39.14	54.6	1.6	5.83	0.1	1.6	17.14	8.8	1.5	70.89	18.9
2.7	40.27	54.7	2.6	6.44	0.4	2.6	17.11	9.2	2.5	70.39	19.2
3.7	41.38	54.8	3.6	6.98	0.7	3.6	17.07	9.5	3.5	69.93	19.5
4.7	42.45	55.0	4.6	7.47	1.0	4.6	17.03	9.8	4.5	69.51	19.8
5.7	43.45	55.1	5.6	7.91	1.2	5.5	17.02	10.1	5.5	69.09	20.1
6.7	44.38	55.3	6.6	8.38	1.4	6.5	17.05	10.3	6.5	68.64	20.4
7.7	45.26	55.4	7.6	8.85	1.7	7.5	17.12	10.6	7.5	68.18	20.7
8.7	46.10	55.6	8.6	9.36	1.9	8.5	17.20	11.0	8.5	67.64	21.1
9.7	46.92	55.7	9.6	9.90	2.1	9.5	17.29	11.3	9.4	67.04	21.4
10.7	47.75	55.8	10.6	10.48	2.4	10.5	17.35	11.6	10.4	66.36	21.8
11.7	48.62	55.9	11.6	11.08	2.6	11.5	17.36	12.0	11.4	65.62	22.1
12.7	49.54	56.0	12.6	11.68	2.9	12.5	17.31	12.3	12.4	64.83	22.4
13.7	50.51	56.1	13.6	12.25	3.2	13.5	17.18	12.7	13.4	64.03	22.7
14.7	51.50	56.3	14.6	12.75	3.6	14.5	16.98	13.1	14.4	63.23	23.0
15.7	52.50	56.5	15.6	13.19	3.9	15.5	16.72	13.4	15.4	62.46	23.3
16.7	53.50	56.7	16.6	13.55	4.2	16.5	16.42	13.7	16.4	61.74	23.5
17.7	54.46	56.9	17.6	13.84	4.5	17.5	16.12	14.1	17.4	61.06	23.8
18.7	55.37	57.1	18.6	14.07	4.8	18.5	15.81	14.3	18.4	60.40	24.1
19.7	56.20	57.3	19.6	14.28	5.1	19.5	15.55	14.6	19.4	59.75	24.4
20.7	56.97	57.5	20.6	14.49	5.4	20.5	15.32	14.9	20.4	59.08	24.7
21.7	57.67	57.7	21.6	14.73	5.7	21.5	15.13	15.2	21.4	58.37	25.0
22.7	58.35	57.9	23.6	15.01	5.9	22.5	14.97	15.5	22.4	57.59	25.3
23.7	59.00	58.1	23.6	15.33	6.2	23.5	14.80	15.9	23.4	56.74	25.6
24.7	59.68	58.3	24.6	15.68	6.5	24.5	14.59	16.2	24.4	55.82	25.9
25.7	60.40	58.5	25.6	16.03	6.8	25.5	14.33	16.6	25.4	54.84	26.2
26.7	61.15	58.7	26.6	16.37	7.1	26.5	13.99	17.0	26.4	53.82	26.5
27.7	61.95	58.9	27.6	16.66	7.4	27.5	13.58	17.3	27.4	52.80	26.8
28.6	62.77	59.1	28.6	16.90	7.8	28.5	13.09	17.7	28.4	51.80	27.0
29.6	63.59	59.3	29.6	17.05	8.2	29.5	12.55	18.0	29.4	50.84	27.2
30.6	64.39	59.6	30.6	17.12	8.5	30.5	11.99	18.3	30.4	49.92	27.5
31.6	65.15	59.8	31.6	17.14	8.8	31.5	11.43	18.6	31.4	49.04	27.8
32.6	65.83	60.1	32.6	17.11	9.2	32.5	10.89	18.9	32.4	48.19	27.9

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON

Mean Solar Date	SEPTEMBER		Mean Solar Date	OCTOBER		Mean Solar Date	NOVEMBER		Mean Solar Date	DECEMBER	
	Right Ascension	Declination North		Right Ascension	Declination North		Right Ascension	Declination North		Right Ascension	Declination North
	h m 19 53	° ′ 88 55		h m 19 52	° ′ 88 55		h m 19 51	° ′ 88 55		h m 19 51	° ′ [illegible]
	s	″		s	″		s	″		s	″
1.4	48.19	27.9	1.3	74.06	34.0	1.2	92.30	35.9	1.1	54.11	[illegible]
2.4	47.34	28.3	2.3	72.81	34.2	2.2	90.81	35.9	2.1	52.91	[illegible]
3.4	46.46	28.4	3.3	71.50	34.3	3.2	89.25	35.9	3.1	51.70	[illegible]
4.4	45.53	28.7	4.3	70.13	34.5	4.2	87.90	35.9	4.1	50.71	[illegible]
5.4	44.54	29.0	5.3	68.71	34.6	5.2	86.50	35.9	5.1	[illegible]	[illegible]
6.4	43.47	29.3	6.3	67.27	34.7	6.2	85.17	35.8	6.1	[illegible]	[illegible]
7.4	42.34	29.6	7.3	65.78	34.8	7.2	83.87	35.7	7.1	[illegible]	[illegible]
8.4	41.16	29.8	8.3	64.41	34.9	8.2	82.64	35.6	8.1	[illegible]	[illegible]
9.4	39.97	30.0	9.3	63.04	35.0	9.2	81.43	35.5	9.1	[illegible]	[illegible]
10.4	38.77	30.2	10.3	61.78	35.0	10.2	80.26	35.5	10.1	[illegible]	[illegible]
11.4	37.51	30.4	11.3	60.46	35.1	11.2	79.08	35.5	11.1	[illegible]	[illegible]
12.4	36.09	30.6	12.3	59.23	35.2	12.2	77.78	35.4	12.1	[illegible]	[illegible]
13.4	35.41	30.8	13.3	58.08	35.3	13.2	76.40	35.4	13.1	[illegible]	[illegible]
14.3	34.17	31.0	14.3	56.79	35.3	14.2	75.13	35.3	14.1	[illegible]	[illegible]
15.3	[illegible]	31.2	15.3	[illegible]	35.5	15.2	73.74	35.3	15.1	[illegible]	[illegible]
16.3	[illegible]	31.4	16.3	54.21	35.6	16.2	72.33	35.2	16.1	[illegible]	[illegible]
17.3	31.27	31.6	17.3	52.81	35.7	17.2	70.94	35.1	17.1	[illegible]	[illegible]
18.3	30.17	31.8	18.3	51.[illegible]	35.8	18.2	[illegible]	35.0	18.1	[illegible] 16	[illegible]
19.3	[illegible]	32.1	19.3	[illegible]	35.8	19.2	[illegible]	34.8	19.1	[illegible]	[illegible]
20.3	27.76	32.3	20.3	[illegible]	35.9	20.2	[illegible]	34.6	20.1	[illegible]	[illegible]
21.3	[illegible]	32.5	21.2	[illegible]	35.9	21.2	[illegible]	34.4	21.1	[illegible]	[illegible]
22.3	[illegible]	32.7	22.2	[illegible]	35.9	22.2	64.74	34.3	22.1	[illegible]	[illegible]
23.3	[illegible]	32.9	23.2	44.18	35.9	23.2	[illegible]	34.1	23.1	[illegible]	[illegible]
24.3	[illegible]	33.0	24.2	[illegible]	35.9	24.2	[illegible]	34.0	24.1	[illegible]	[illegible]
25.3	[illegible] 14	33.1	25.2	41.[illegible]	[illegible]	25.2	61.[illegible]	[illegible]	25.1	[illegible]	[illegible]
26.3	[illegible]	33.3	26.2	[illegible]	[illegible]	26.1	[illegible]	[illegible]	26.1	[illegible]	[illegible]
27.3	[illegible]	33.4	27.2	[illegible]	[illegible]	27.1	[illegible] 13	[illegible]	27.1	[illegible]	[illegible]
28.3	[illegible]	[illegible]	28.2	[illegible]	[illegible]	28.1	[illegible]	[illegible]	28.1	[illegible]	[illegible]
29.3	[illegible]	[illegible]	29.2	[illegible]	[illegible]	29.1	[illegible]	[illegible]	29.1	[illegible]	[illegible]
30.3	[illegible]	[illegible]	30.2	[illegible]	[illegible]	30.1	[illegible]	[illegible]	30.1	[illegible]	[illegible]
31.3	[illegible]	[illegible]	31.2	[illegible]	[illegible]	31.1	[illegible] 11	[illegible]	31.1	[illegible]	[illegible]
32.3	[illegible]	[illegible]	32.2	[illegible]	[illegible]	32.1	[illegible]	[illegible]	32.1	[illegible]	[illegible]

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Andromedæ.		γ Pegasi. (*Algenib.*)		*β Hydri.		α Cassiopeæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 0 1	° ′ 28 22	h m 0 6	° ′ 14 27	h m 0 18	° ′ 77 58	h m 0 33	° ′ 55 49
	s	″	s	″	s	″	s	″
Jan. 0.2	42.20 −.14	43.8 −0.8	34.53 −.12	56.4 −0.8	53.86 −.90	81.1 −0.8	11.09 −.29	55.1 −0.2
10.2	42.06 .14	42.8 1.1	34.41 .11	55.5 0.9	52.98 .85	80.0 1.4	10.80 .29	54.6 0.7
20.2	41.92 .13	41.6 1.3	34.30 .11	54.6 1.0	52.16 .78	78.3 1.9	10.51 .28	53.7 1.2
30.2	41.80 .11	40.2 1.5	34.20 .09	53.5 1.0	51.43 .68	76.1 2.4	10.23 .26	52.2 1.6
Feb. 9.1	41.70 .09	38.6 1.6	34.11 .08	52.5 1.0	50.80 .57	73.4 2.9	9.98 .23	50.4 2.0
19.1	41.62 .06	37.0 1.6	34.05 .05	51.5 1.0	50.29 .44	70.3 3.3	9.77 .19	48.3 2.3
Mar. 1.1	41.58 −.03	35.4 1.6	34.01 −.02	50.5 0.9	49.92 .30	66.9 3.5	9.60 .13	45.9 2.4
11.0	41.57 +.01	33.8 1.5	34.01 +.01	49.7 0.7	49.70 −.14	63.3 3.7	9.50 −.07	43.4 2.5
21.0	41.60 .06	32.4 1.3	34.04 .05	49.1 0.5	49.63 +.01	59.5 3.8	9.46 .00	40.9 2.5
31.0	41.68 .10	31.2 1.0	34.11 .09	48.8 −0.2	49.72 .17	55.7 3.8	9.50 +.07	38.4 2.4
Apr. 10.0	41.80 .15	30.3 0.7	34.22 .13	48.7 0.0	49.97 .33	51.8 3.8	9.60 .15	36.2 2.1
19.9	41.97 .19	29.8 −0.4	34.38 .17	48.9 +0.4	50.38 .48	48.1 3.6	9.79 .22	34.2 1.8
29.9	42.18 .23	29.6 0.0	34.57 .21	49.4 0.7	50.93 .63	44.6 3.4	10.04 .29	32.5 1.4
May 9.9	42.44 .27	29.8 +0.4	34.81 .25	50.2 1.0	51.63 .76	41.3 3.1	10.36 .34	31.3 1.0
19.9	42.72 .30	30.4 0.8	35.07 .28	51.4 1.3	52.46 .88	38.3 2.8	10.73 .40	30.6 −0.5
29.8	43.04 .32	31.4 1.2	35.36 .30	52.8 1.5	53.40 .99	35.7 2.4	11.15 .43	30.3 0.0
June 8.8	43.37 .34	32.7 1.5	35.67 .31	54.5 1.8	54.43 1.06	33.5 1.0	11.60 .46	30.6 +0.5
18.8	43.71 .34	34.4 1.8	35.99 .32	56.4 2.0	55.52 1.12	31.9 1.4	12.07 .47	31.3 1.0
28.7	44.05 .34	36.4 2.1	36.31 .32	58.4 2.1	56.66 1.14	30.8 0.8	12.55 .47	32.5 1.4
July 8.7	44.38 .32	38.5 2.3	36.62 .31	60.5 2.1	57.81 1.14	30.3 −0.2	13.02 .46	34.2 1.9
18.7	44.69 .30	40.9 2.4	36.92 .29	62.7 2.2	58.93 1.10	30.3 +0.3	13.47 .44	36.2 2.2
28.7	44.99 .27	43.3 2.5	37.20 .26	64.8 2.1	60.00 1.03	30.9 0.9	13.89 .40	38.7 2.6
Aug. 7.6	45.24 .24	45.9 2.5	37.45 .23	67.0 2.1	60.99 .93	32.1 1.4	14.28 .36	41.4 2.8
17.6	45·47 .20	48.4 2.5	37.67 .20	69.0 1.9	61.87 .81	33.7 1.9	14.62 .32	44.3 3.0
27.6	45.65 .16	50.8 2.4	37.85 .16	70.8 1.8	62.61 .66	35.8 2.3	14.91 .26	47.4 3.2
Sept. 6.6	45.80 .12	53.2 2.3	37.99 .13	72.5 1.6	63.19 .49	38.4 2.6	15.15 .21	50.6 3.2
16.5	45.90 .08	55.4 2.1	38.10 .09	74.0 1.4	63.59 .30	41.2 2.9	15.33 .15	53.9 3.2
26.5	45.96 .04	57.5 1.9	38.17 .05	75.3 1.2	63.80 +.11	44.1 3.0	15.45 .09	57.1 3.2
Oct. 6.5	45.98 +.01	59.3 1.7	38.20 +.02	76.4 0.9	63.81 −.08	47.2 3.0	15.52 +.04	60.3 3.1
16.4	45.97 −.02	61.0 1.5	38.20 −.01	77.2 0.7	63.64 .26	50.2 2.9	15.53 −.02	63.3 2.9
26.4	45.93 .05	62.3 1.2	38.18 .04	77.8 0.5	63.28 .44	53.1 2.7	15.48 .07	66.1 2.7
Nov. 5.4	45.87 .08	63.4 0.9	38.12 .06	78.2 0.3	62.77 .59	55.6 2.3	15.39 .11	68.7 2.4
15.4	45.78 .10	64.2 0.6	38.05 .08	78.3 +0.1	62.11 .71	57.8 1.9	15.25 .16	70.9 2.0
25.3	45.67 .12	64.7 +0.3	37.96 .09	78.3 −0.1	61.34 .81	59.4 1.4	15.07 .20	72.7 1.6
Dec. 5.3	45.54 .13	64.8 0.0	37.86 .10	78.0 0.3	60.49 .88	60.6 0.8	14.85 .23	74.1 1.1
15.3	45.41 .14	64.6 −0.3	37.75 .11	77.6 0.5	59.58 .91	61.1 +0.2	14.61 .26	75.0 0.7
25.3	45.27 .14	64.2 0.6	37.64 .12	77.0 0.7	58.66 .91	61.0 −0.4	14.34 .28	75.4 +0.1
35.2	45.13 −.14	63.4 −0.9	37.52 −.11	76.2 −0.8	57.76 −.88	60.2 −1.0	14.05 −.29	75.3 −0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Ceti.		*21 Cassiopeæ.		ε Piscium.		θ¹ Ceti.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	$0^{h}\ 37^{m}$	$18^{\circ}\ 41'$	$0^{h}\ 37^{m}$	$74^{\circ}\ 16'$	$0^{h}\ 56^{m}$	$7^{\circ}\ 11'$	$1^{h}\ 17^{m}$	$8^{\circ}\ 50'$
	s	″	s	″	s	″	s	″
Jan. 0.3	5.71 −.12	56.6 +0.6	9.41 −.72	67.2 +0.3	14.09 −.11	36.8 −0.6	33.77 −.11	69.3 +0.8
10.2	5.59 .12	57.1 0.3	8.68 .72	67.2 −0.4	13.97 .12	36.1 0.7	33.65 .12	70.0 0.6
20.2	5.47 .12	57.3 +0.1	7.97 .70	66.5 1.0	13.85 .12	35.4 0.7	33.53 .12	70.5 0.4
30.2	5.36 .11	57.2 −0.2	7.28 .66	65.2 1.5	13.73 .11	34.7 0.7	33.40 .12	70.8 +0.2
Feb. 9.2	5.25 .09	56.9 0.5	6.65 .58	63.5 2.0	13.62 .10	34.1 0.6	33.28 .12	70.9 0.0
19.1	5.17 .07	56.3 0.7	6.12 .48	61.2 2.4	13.53 .09	33.5 0.5	33.17 .10	70.9 −0.2
Mar. 1.1	5.11 .05	55.4 1.0	5.69 .36	58.7 2.7	13.45 .06	33.1 0.4	33.08 .08	70.5 0.4
11.1	5.08 −.01	54.3 1.3	5.39 .23	55.8 2.9	13.40 −.03	32.8 −0.2	33.01 .05	70.0 0.7
21.1	5.08 +.02	52.9 1.5	5.24 −.08	52.9 3.0	13.38 .00	32.6 0.0	32.97 −.02	69.2 0.9
31.0	5.12 .06	51.3 1.7	5.24 +.07	49.9 2.9	13.41 +.04	32.7 +0.2	32.97 +.02	68.2 1.1
Apr. 10.0	5.20 .10	49.4 1.9	5.39 .23	47.1 2.7	13.47 .08	33.0 0.4	33.01 .06	66.9 1.4
20.0	5.32 .14	47.4 2.1	5.69 .37	44.4 2.5	13.57 .13	33.6 0.7	33.09 .10	65.4 1.6
29.9	5.49 .18	45.2 2.3	6.13 .50	42.1 2.1	13.72 .17	34.4 1.0	33.21 .14	63.7 1.8
May 9.9	5.69 .22	42.8 2.3	6.69 .62	40.2 1.7	13.91 .21	35.5 1.2	33.38 .19	61.8 2.0
19.9	5.93 .26	40.5 2.4	7.37 .72	38.8 1.2	14.13 .24	36.8 1.4	33.58 .22	59.8 2.1
29.9	6.21 .29	38.1 2.4	8.13 .79	37.9 0.6	14.39 .27	38.4 1.6	33.82 .26	57.7 2.2
June 8.8	6.50 .31	35.7 2.3	8.95 .84	37.5 −0.1	14.68 .29	40.1 1.8	34.09 .28	55.5 2.2
18.8	6.82 .32	33.5 2.2	9.81 .86	37.7 +0.5	14.98 .31	42.0 1.9	34.39 .30	53.2 2.2
28.8	7.15 .33	31.4 2.0	10.68 .87	38.4 1.0	15.29 .31	44.0 2.0	34.70 .31	51.1 2.1
July 8.8	7.47 .32	29.5 1.8	11.54 .85	39.7 1.5	15.61 .31	46.0 2.0	35.01 .31	49.0 2.0
18.7	7.79 .31	27.8 1.5	12.37 .80	41.5 2.0	15.92 .30	48.0 2.0	35.32 .31	47.1 1.8
28.7	8.10 .29	26.5 1.2	13.15 .75	43.7 2.4	16.22 .29	49.9 1.9	35.63 .30	45.4 1.6
Aug. 7.7	8.38 .27	25.5 0.8	13.86 .67	46.3 2.8	16.49 .26	51.7 1.8	35.91 .28	44.0 1.3
17.6	8.63 .23	24.8 0.5	14.49 .58	49.2 3.1	16.74 .24	53.4 1.6	36.18 .25	42.8 1.0
27.6	8.85 .20	24.5 −0.1	15.02 .48	52.5 3.4	16.96 .20	54.9 1.4	36.42 .23	42.0 0.7
Sept. 6.6	9.03 .16	24.6 +0.2	15.45 .38	56.0 3.5	17.15 .17	56.2 1.2	36.63 .19	41.5 0.4
16.6	9.17 .12	25.0 0.5	15.77 .26	59.6 3.7	17.31 .14	57.3 1.0	36.80 .16	41.3 −0.1
26.5	9.28 .08	25.7 0.8	15.98 .15	63.3 3.7	17.42 .10	58.1 0.7	36.94 .12	41.4 +0.2
Oct. 6.5	9.34 .05	26.6 1.0	16.07 +.03	67.0 3.7	17.51 .07	58.7 0.5	37.05 .09	41.7 0.5
16.5	9.37 +.01	27.7 1.2	16.04 −.09	70.6 3.5	17.56 .04	59.1 0.3	37.12 .06	42.3 0.7
26.5	9.37 −.02	29.0 1.3	15.90 .20	74.0 3.3	17.59 +.01	59.3 +0.1	37.16 +.03	43.1 0.8
Nov. 5.4	9.34 .04	30.3 1.3	15.64 .31	77.3 3.1	17.58 −.02	59.3 −0.1	37.17 .00	44.0 1.0
15.4	9.28 .07	31.6 1.3	15.28 .41	80.2 2.7	17.55 .04	59.2 0.2	37.15 −.03	45.0 1.0
25.4	9.20 .09	32.9 1.2	14.82 .51	82.7 2.3	17.50 .06	58.9 0.3	37.11 .05	46.1 1.0
Dec. 5.3	9.10 .10	34.0 1.1	14.27 .59	84.7 1.8	17.43 .08	58.5 0.5	37.05 .07	47.1 1.0
15.3	8.99 .11	35.1 0.9	13.64 .65	86.3 1.2	17.34 .09	58.0 0.5	36.97 .09	48.1 0.9
25.3	8.88 .12	35.9 0.7	12.96 .69	87.2 +0.6	17.24 .10	57.4 0.6	36.87 .10	49.0 0.8
35.3	8.76 −.12	36.4 +0.5	12.25 −.72	87.6 0.0	17.14 −.11	56.8 −0.7	36.76 −.11	49.7 +0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*38 Cassiopeæ.		η Piscium.		α Eridani. (*Achernar.*)		o Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 1 21	° ′ 69 35	h m 1 24	° ′ 14 40	h m 1 32	° ′ 57 53	h m 1 38	° ′ 8 30
	s	″	s	″	s	″	s	″
Jan. 0.3	39.66 −.49	69.4 +0.7	34.19 −.11	45.7 −0.5	53.93 −.31	57.5 +0.6	34.41 −.11	22.0 −0.6
10.2	39.14 .53	69.8 +0.1	34.07 .13	45.1 0.6	53.61 .32	57.8 +0.1	34.30 .12	21.4 0.6
20.2	38.61 .54	69.7 −0.4	33.94 .13	44.5 0.7	53.29 .32	57.6 −0.5	34.17 .13	20.8 0.6
30.2	38.07 .52	69.0 1.0	33.81 .13	43.8 0.7	52.97 .31	56.8 1.0	34.04 .13	20.1 0.6
Feb. 9.2	37.56 .49	67.7 1.5	33.67 .13	43.0 0.8	52.66 .29	55.5 1.6	33.91 .13	19.6 0.5
19.1	37.09 .44	66.0 1.9	33.55 .11	42.2 0.7	52.38 .26	53.7 2.0	33.79 .12	19.0 0.5
Mar. 1.1	36.68 .36	63.8 2.3	33.45 .09	41.5 0.7	52.14 .22	51.4 2.5	33.68 .10	18.6 0.4
11.1	36.37 .27	61.4 2.6	33.37 .06	40.9 0.6	51.93 .18	48.8 2.8	33.59 .07	18.3 0.3
21.1	36.15 .16	58.7 2.7	33.33 −.03	40.4 0.4	51.78 .12	45.8 3.1	33.54 −.04	18.1 −0.1
31.0	36.05 −.04	56.0 2.8	33.32 +.01	40.0 −0.3	51.69 −.06	42.5 3.4	33.52 .00	18.1 +0.1
Apr. 10.0	36.06 +.08	53.2 2.7	33.36 .06	39.8 0.0	51.67 +.01	39.1 3.5	33.54 +.04	18.3 0.3
20.0	36.20 .20	50.6 2.5	33.44 .10	39.9 +0.2	51.71 .08	35.5 3.6	33.60 .09	18.8 0.6
29.9	36.45 .31	48.2 2.2	33.56 .15	40.3 0.5	51.83 .15	31.8 3.6	33.71 .13	19.5 0.8
May 9.9	36.82 .42	46.1 1.9	33.73 .19	40.9 0.7	52.01 .22	28.2 3.6	33.86 .17	20.4 1.1
19.9	37.29 .51	44.4 1.5	33.94 .23	41.8 1.0	52.27 .28	24.7 3.4	34.06 .21	21.6 1.3
29.9	37.84 .59	43.2 1.0	34.19 .26	42.9 1.3	52.58 .34	21.4 3.2	34.29 .25	23.0 1.5
June 8.8	38.46 .65	42.5 −0.5	34.46 .29	44.3 1.5	52.95 .39	18.3 2.9	34.55 .28	24.5 1.7
18.8	39.14 .69	42.2 0.0	34.76 .31	45.9 1.7	53.37 .44	15.6 2.5	34.84 .30	26.3 1.8
28.8	39.84 .71	42.5 +0.5	35.08 .32	47.6 1.8	53.83 .47	13.3 2.1	35.14 .31	28.1 1.9
July 8.8	40.55 .71	43.3 1.0	35.40 .32	49.5 1.9	54.30 .48	11.4 1.6	35.46 .31	30.0 1.9
18.7	41.26 .70	44.6 1.5	35.72 .31	51.4 1.9	54.79 .48	10.1 1.1	35.77 .31	32.0 1.9
28.7	41.95 .67	46.3 1.9	36.03 .30	53.4 1.9	55.28 .48	9.3 −0.5	36.08 .30	33.8 1.8
Aug. 7.7	42.60 .63	48.4 2.3	36.32 .28	55.3 1.9	55.75 .46	9.0 0.0	36.38 .28	35.6 1.7
17.6	43.20 .57	51.0 2.7	36.59 .26	57.2 1.8	56.19 .42	9.3 +0.6	36.65 .26	37.3 1.6
27.6	43.75 .51	53.8 3.0	36.84 .23	58.9 1.7	56.60 .38	10.3 1.2	36.90 .24	38.8 1.4
Sept. 6.6	44.22 .43	56.9 3.2	37.05 .20	60.5 1.5	56.95 .33	11.7 1.6	37.12 .21	40.1 1.2
16.6	44.61 .35	60.2 3.4	37.24 .17	61.9 1.3	57.25 .26	13.5 2.1	37.32 .18	41.2 1.0
26.5	44.92 .27	63.6 3.5	37.39 .13	63.2 1.1	57.48 .20	15.8 2.4	37.48 .14	42.1 0.8
Oct. 6.5	45.15 .18	67.1 3.5	37.50 .10	64.2 0.9	57.64 .13	18.4 2.7	37.61 .11	42.7 0.5
16.5	45.29 +.09	70.6 3.5	37.59 .07	65.0 0.7	57.73 +.05	21.2 2.9	37.70 .08	43.2 0.3
26.5	45.33 .00	74.0 3.3	37.64 .04	65.7 0.5	57.75 −.01	24.1 2.9	37.77 .05	43.4 +0.1
Nov. 5.4	45.28 −.09	77.3 3.1	37.66 +.01	66.1 0.3	57.71 .08	27.0 2.8	37.81 +.02	43.5 0.0
15.4	45.15 .18	80.3 2.9	37.66 −.02	66.4 +0.2	57.60 .14	29.8 2.6	37.82 .00	43.4 −0.2
25.4	44.92 .26	83.0 2.5	37.63 .04	66.5 0.0	57.43 .19	32.2 2.3	37.80 −.03	43.2 0.3
Dec. 5.3	44.62 .34	85.4 2.1	37.58 .06	66.4 −0.1	57.21 .24	34.4 1.9	37.76 .05	42.8 0.4
15.3	44.24 .41	87.3 1.6	37.50 .08	66.2 0.3	56.96 .27	36.1 1.5	37.70 .07	42.4 0.5
25.3	43.80 .47	88.6 1.1	37.41 .10	65.9 0.4	56.67 .30	37.3 0.9	37.61 .09	41.9 0.5
35.3	43.31 −.51	89.5 +0.5	37.30 −.12	65.4 −0.5	56.36 −.32	38.0 +0.4	37.51 −.11	41.3 −0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Arietis.		*50 Cassiopeæ.		α Arietis.		ξ¹ Ceti.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	1h 47m	20° 10′	1h 52m	71° 47′	1h 59m	22° 50′	2h 6m	8° 14′
	s	″	s	″	s	″	s	″
Jan. 0.3	30.43 −.11	34.4 −0.3	28.07 −.53	53.2 +1.2	53.78 −.11	64.4 −0.2	9.32 −.10	20.0 −0.6
10.3	30.30 .13	34.0 0.5	27.51 .58	54.1 +0.6	53.66 .13	64.1 0.4	9.21 .12	19.4 0.6
20.2	30.17 .14	33.5 0.6	26.91 .61	54.4 0.0	53.52 .14	63.7 0.5	9.09 .13	18.9 0.5
30.2	30.03 .14	32.8 0.7	26.29 .61	54.1 −0.5	53.37 .15	63.1 0.7	8.95 .14	18.4 0.5
Feb. 9.2	29.88 .14	32.0 0.8	25.68 .59	53.3 1.1	53.22 .15	62.3 0.8	8.81 .14	17.8 0.5
19.2	29.74 .13	31.2 0.8	25.11 .54	51.9 1.6	53.07 .14	61.5 0.9	8.68 .13	17.3 0.4
Mar. 1.1	29.62 .11	30.4 0.8	24.60 .47	50.1 2.0	52.93 .12	60.6 0.9	8.55 .12	16.9 0.3
11.1	29.52 .09	29.5 0.8	24.17 .38	47.9 2.3	52.82 .10	59.7 0.9	8.44 .09	16.7 0.2
21.1	29.44 .05	28.8 0.7	23.84 .27	45.4 2.6	52.74 .06	58.8 0.8	8.36 .06	16.6 −0.1
31.1	29.41 −.01	28.1 0.6	23.63 .14	42.7 2.7	52.69 −.02	58.1 0.7	8.32 −.03	16.6 +0.1
Apr. 10.0	29.43 +.03	27.6 0.4	23.55 −.01	40.0 2.7	52.69 +.02	57.5 0.5	8.31 +.01	16.8 0.3
20.0	29.48 .08	27.4 −0.2	23.61 +.13	37.3 2.6	52.74 .07	57.0 0.3	8.35 .06	17.2 0.6
30.0	29.59 .13	27.3 +0.1	23.81 .26	34.7 2.4	52.83 .12	56.8 −0.1	8.43 .10	17.9 0.8
May 9.9	29.74 .17	27.6 0.4	24.13 .38	32.4 2.2	52.97 .17	56.8 +0.2	8.56 .15	18.8 1.0
19.9	29.94 .22	28.1 0.6	24.57 .50	30.4 1.8	53.16 .21	57.2 0.5	8.73 .19	19.9 1.2
29.9	30.18 .25	28.9 0.9	25.12 .59	28.8 1.4	53.40 .25	57.8 0.7	8.94 .23	21.3 1.4
June 8.9	30.45 .28	29.9 1.2	25.75 .67	27.7 0.9	53.66 .28	58.6 1.0	9.18 .26	22.8 1.6
18.8	30.74 .31	31.2 1.4	26.46 .73	27.0 −0.4	53.96 .31	59.8 1.2	9.45 .28	24.4 1.7
28.8	31.06 .32	32.7 1.6	27.22 .77	26.8 +0.1	54.27 .32	61.1 1.4	9.75 .30	26.2 1.8
July 8.8	31.38 .33	34.4 1.7	28.01 .79	27.1 0.6	54.60 .33	62.6 1.6	10.06 .31	28.0 1.8
18.8	31.71 .32	36.2 1.8	28.80 .79	28.0 1.1	54.93 .33	64.3 1.7	10.37 .31	29.9 1.8
28.7	32.03 .32	38.0 1.9	29.59 .77	29.3 1.5	55.26 .32	66.1 1.8	10.68 .31	31.7 1.8
Aug. 7.7	32.34 .30	39.9 1.9	30.35 .74	31.0 1.9	55.58 .31	68.0 1.9	10.98 .29	33.4 1.7
17.7	32.63 .28	41.8 1.9	31.08 .69	33.1 2.3	55.88 .29	69.8 1.9	11.27 .28	35.0 1.5
27.6	32.90 .25	43.7 1.8	31.74 .63	35.7 2.7	56.16 .26	71.7 1.8	11.53 .25	36.5 1.3
Sept. 6.6	33.14 .22	45.4 1.7	32.34 .56	38.5 2.9	56.41 .24	73.4 1.7	11.78 .23	37.7 1.1
16.6	33.35 .19	47.0 1.5	32.87 .48	41.6 3.2	56.63 .21	75.1 1.6	11.99 .20	38.8 0.9
26.6	33.52 .16	48.5 1.4	33.31 .40	44.8 3.3	56.82 .17	76.7 1.5	12.18 .17	39.6 0.7
Oct. 6.5	33.67 .13	49.8 1.2	33.66 .30	48.2 3.4	56.98 .14	78.1 1.3	12.33 .14	40.2 0.5
16.5	33.78 .09	50.9 1.0	33.91 .20	51.7 3.5	57.11 .11	79.4 1.2	12.46 .11	40.6 0.3
26.5	33.86 .06	51.9 0.9	34.06 +.10	55.2 3.4	57.21 .08	80.4 1.0	12.55 .08	40.8 +0.1
Nov. 5.5	33.91 +.03	52.6 0.7	34.11 −.01	58.6 3.3	57.27 .05	81.4 0.8	12.62 .05	40.8 −0.1
15.4	33.93 .00	53.2 0.5	34.05 .11	61.8 3.1	57.31 +.02	82.1 0.7	12.65 +.02	40.6 0.2
25.4	33.92 −.02	53.6 0.3	33.89 .21	64.8 2.8	57.31 −.01	82.7 0.5	12.66 −.01	40.4 0.3
Dec. 5.4	33.88 .05	53.8 +0.1	33.62 .31	67.4 2.5	57.28 .04	83.1 0.3	12.64 .03	40.0 0.4
15.3	33.82 .07	53.9 0.0	33.26 .40	69.7 2.0	57.23 .07	83.3 +0.1	12.60 .06	39.6 0.5
25.3	33.73 .10	53.8 −0.2	32.82 .48	71.5 1.5	57.14 .09	83.3 −.01	12.53 .08	39.1 0.5
35.3	33.62 −.12	53.5 −0.3	32.30 −.55	72.8 +1.0	57.04 −.12	83.1 −0.3	12.43 −.11	38.6 −0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*ι Cassiopeæ.		γ Ceti.		α Ceti.		*48 Cephei.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 2 18	° ′ 66 48	h m 2 36	° ′ 2 41	h m 2 55	° ′ 3 34	h m 3 3	° ′ 77 15
	s	″	s	″	s	″	s	″
Jan. 0.3	28.13 −.36	82.1 +1.3	36.74 −.08	20.1 −0.7	32.01 −.08	48.9 −0.7	64.25 −.60	32.4 +2.2
10.3	27.74 .42	83.1 0.8	36.64 .11	19.5 0.6	31.92 .10	48.3 0.6	63.59 .72	34.3 1.7
20.3	27.30 .45	83.7 +0.3	36.52 .13	18.8 0.6	31.81 .12	47.7 0.6	62.81 .82	35.7 1.1
30.3	26.83 .47	83.7 −0.3	36.39 .14	18.3 0.5	31.67 .14	47.1 0.5	61.96 .88	36.5 +0.5
Feb. 9.2	26.36 .47	83.2 0.8	36.24 .15	17.9 0.4	31.53 .15	46.7 0.4	61.05 .91	36.7 −0.1
19.2	25.90 .44	82.1 1.3	36.10 .14	17.6 0.2	31.37 .15	46.4 0.3	60.14 .89	36.4 0.6
Mar. 1.2	25.47 .40	80.6 1.7	35.95 .13	17.4 −0.1	31.23 .14	46.2 −0.1	59.26 .84	35.5 1.2
11.2	25.10 .33	78.7 2.1	35.83 .11	17.3 0.0	31.09 .13	46.1 0.0	58.45 .76	34.0 1.7
21.1	24.80 .25	76.5 2.3	35.73 .09	17.5 +0.2	30.97 .10	46.2 +0.2	57.75 .63	32.1 2.1
31.1	24.59 .16	74.1 2.5	35.65 .06	17.8 0.4	30.88 .07	46.5 0.4	57.18 .49	29.8 2.4
Apr. 10.1	24.49 −.05	71.6 2.5	35.62 −.02	18.3 0.6	30.83 −.03	47.0 0.6	56.78 .31	27.3 2.6
20.0	24.49 +.05	69.0 2.5	35.62 +.03	19.0 0.8	30.82 +.01	47.6 0.8	56.55 −.13	24.6 2.7
30.0	24.60 .16	66.6 2.3	35.67 .07	20.0 1.1	30.85 .06	48.5 1.0	56.52 +.06	21.8 2.7
May 10.0	24.81 .27	64.3 2.1	35.77 .12	21.1 1.3	30.93 .10	49.5 1.2	56.67 .24	19.1 2.6
20.0	25.13 .36	62.4 1.8	35.91 .16	22.5 1.4	31.05 .14	50.8 1.4	57.00 .42	16.6 2.4
29.9	25.54 .45	60.7 1.4	36.09 .20	24.0 1.6	31.22 .18	52.3 1.5	57.51 .59	14.3 2.2
June 8.9	26.03 .52	59.5 1.0	36.31 .24	25.7 1.7	31.42 .22	53.9 1.7	58.18 .74	12.3 1.8
18.9	26.58 .58	58.7 0.6	36.56 .26	27.5 1.8	31.66 .25	55.6 1.8	58.99 .86	10.6 1.4
28.9	27.19 .62	58.4 −0.1	36.83 .28	29.4 1.9	31.93 .28	57.4 1.8	59.91 .97	9.4 1.0
July 8.8	27.83 .65	58.5 +0.4	37.13 .30	31.3 1.9	32.22 .29	59.2 1.8	60.93 1.05	8.6 0.5
18.8	28.48 .66	59.1 0.8	37.43 .31	33.1 1.8	32.52 .30	61.0 1.8	62.00 1.10	8.3 −0.1
28.8	29.14 .65	60.1 1.2	37.74 .30	34.9 1.7	32.82 .30	62.7 1.7	63.12 1.13	8.5 +0.4
Aug. 7.7	29.79 .63	61.6 1.7	38.04 .30	36.6 1.6	33.13 .30	64.3 1.5	64.26 1.13	9.1 0.9
17.7	30.41 .60	63.4 2.0	38.34 .29	38.0 1.4	33.42 .29	65.8 1.3	65.38 1.11	10.3 1.3
27.7	30.99 .56	65.6 2.3	38.61 .27	39.3 1.1	33.71 .28	67.0 1.1	66.48 1.07	11.8 1.7
Sept. 6.7	31.53 .51	68.1 2.6	38.87 .25	40.3 0.9	33.97 .26	68.1 0.9	67.52 1.01	13.7 2.1
16.6	32.02 .46	70.9 2.9	39.11 .22	41.1 0.6	34.22 .23	68.8 0.6	68.50 .94	16.1 2.5
26.6	32.45 .39	73.9 3.0	39.32 .20	41.5 0.4	34.44 .21	69.4 0.4	69.39 .84	18.7 2.8
Oct. 6.6	32.80 .32	77.0 3.2	39.50 .17	41.8 +0.1	34.64 .18	69.6 +0.1	70.18 .73	21.6 3.0
16.6	33.08 .24	80.2 3.2	39.65 .14	41.8 −0.1	34.81 .16	69.7 −0.1	70.85 .60	24.8 3.2
26.5	33.29 .17	83.5 3.2	39.77 .11	41.6 0.3	34.95 .13	69.5 0.3	71.39 .47	28.1 3.4
Nov. 5.5	33.42 +.08	86.7 3.1	39.86 .08	41.2 0.5	35.07 .10	69.1 0.4	71.78 .32	31.5 3.4
15.5	33.46 .00	89.7 3.0	39.93 .05	40.7 0.6	35.15 .07	68.6 0.6	72.02 +.16	34.9 3.4
25.4	33.41 −.09	92.6 2.8	39.96 +.02	40.1 0.6	35.20 .04	68.0 0.6	72.10 −.01	38.3 3.3
Dec. 5.4	33.29 .17	95.2 2.5	39.97 −.01	39.4 0.7	35.23 +.01	67.3 0.7	72.00 .18	41.5 3.1
15.4	33.08 .25	97.5 2.1	39.94 .04	38.7 0.7	35.22 −.02	66.6 0.7	71.74 .34	44.4 2.8
25.4	32.79 .32	99.4 1.6	39.89 .07	38.0 0.7	35.18 .06	65.9 0.7	71.32 .50	47.1 2.4
35.3	32.44 −.38	100.8 +1.2	39.81 −.09	37.3 −0.7	35.10 −.09	65.2 −0.6	70.75 −.64	49.3 +2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Arietis.		α Persei.		δ Persei.		η Tauri.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	3h 7m	20° 33′	3h 15m	49° 23′	3h 33m	47° 22′	3h 39m	23° 42′
	s	″	s	″	s	″	s	″
Jan. 0.4	29.18 −.07	51.9 −0.1	7.41 −.13	63.4 +1.2	44.90 −.10	24.7 +1.2	49.07 −.05	14.1 +0.2
10.3	29.09 .10	51.8 0.1	7.25 .17	64.5 0.9	44.77 .15	25.8 0.9	49.00 .09	14.2 +0.1
20.3	28.97 .13	51.6 0.2	7.06 .21	65.2 0.5	44.61 .19	26.6 0.6	48.89 .12	14.2 0.0
30.3	28.83 .15	51.3 0.3	6.83 .24	65.5 +0.1	44.40 .22	27.0 +0.3	48.76 .15	14.1 −0.2
Feb. 9.3	28.67 .16	50.9 0.4	6.58 .26	65.4 −0.2	44.16 .24	27.2 −0.1	48.60 .17	13.9 0.3
19.2	28.51 .17	50.5 0.5	6.31 .26	65.0 0.6	43.91 .25	26.9 0.4	48.43 .18	13.5 0.4
Mar. 1.2	28.34 .16	49.9 0.5	6.05 .25	64.2 0.9	43.65 .25	26.3 0.7	48.25 .18	13.1 0.4
11.2	28.19 .14	49.4 0.6	5.80 .23	63.1 1.2	43.41 .23	25.4 1.0	48.07 .16	12.7 0.5
21.2	28.06 .12	48.8 0.5	5.59 .19	61.7 1.5	43.19 .20	24.2 1.3	47.92 .14	12.1 0.5
31.1	27.95 .08	48.3 0.5	5.42 .14	60.2 1.6	43.01 .16	22.9 1.4	47.79 .11	11.6 0.5
Apr. 10.1	27.89 −.04	47.9 0.4	5.30 .09	58.5 1.7	42.88 .10	21.4 1.5	47.70 .07	11.1 0.5
20.1	27.87 .00	47.6 −0.2	5.24 −.02	56.8 1.7	42.80 −.04	19.8 1.6	47.64 −.03	10.7 0.4
30.0	27.89 +.05	47.5 0.0	5.26 +.05	55.1 1.6	42.79 +.02	18.2 1.5	47.64 +.02	10.3 0.3
May 10.0	27.97 .10	47.5 +0.1	5.34 .12	53.5 1.5	42.85 .09	16.7 1.4	47.68 .07	10.1 −0.1
20.0	28.09 .15	47.8 0.3	5.49 .18	52.1 1.3	42.97 .15	15.4 1.2	47.78 .12	10.1 +0.1
30.0	28.26 .19	48.2 0.6	5.70 .24	50.9 1.0	43.15 .21	14.2 1.0	47.92 .17	10.3 0.3
June 8.9	28.47 .23	48.9 0.8	5.97 .30	50.0 0.8	43.40 .27	13.3 0.8	48.11 .21	10.6 0.4
18.9	28.72 .26	49.8 1.0	6.30 .34	49.4 0.4	43.69 .32	12.6 0.5	48.34 .24	11.2 0.6
28.9	29.00 .29	50.8 1.1	6.66 .38	49.1 −0.1	44.03 .36	12.3 −0.2	48.60 .27	11.9 0.8
July 8.9	29.30 .31	52.0 1.3	7.06 .41	49.2 +0.2	44.41 .39	12.2 +0.1	48.89 .30	12.8 1.0
18.8	29.62 .32	53.4 1.4	7.48 .43	49.5 0.5	44.80 .41	12.5 0.4	49.20 .31	13.9 1.1
28.8	29.94 .32	54.8 1.4	7.91 .43	50.2 0.8	45.22 .42	13.0 0.7	49.52 .32	15.0 1.2
Aug. 7.8	30.26 .32	56.2 1.5	8.35 .44	51.2 1.1	45.64 .42	13.9 0.9	49.85 .33	16.2 1.2
17.7	30.58 .31	57.7 1.5	8.78 .43	52.5 1.4	46.06 .42	14.9 1.2	50.17 .32	17.5 1.3
27.7	30.88 .30	59.2 1.4	9.20 .41	54.0 1.6	46.48 .41	16.2 1.4	50.50 .31	18.7 1.2
Sept. 6.7	31.18 .28	60.5 1.3	9.61 .39	55.7 1.8	46.88 .39	17.7 1.6	50.80 .30	20.0 1.2
16.7	31.45 .26	61.8 1.2	9.98 .36	57.6 2.0	47.26 .37	19.4 1.7	51.10 .28	21.1 1.1
26.6	31.69 .23	63.0 1.1	10.33 .33	59.7 2.1	47.61 .34	21.2 1.9	51.37 .26	22.2 1.0
Oct. 6.6	31.92 .21	64.0 1.0	10.65 .30	61.8 2.2	47.94 .31	23.1 2.0	51.63 .24	23.2 1.0
16.6	32.11 .18	64.9 0.8	10.92 .26	64.0 2.2	48.23 .27	25.1 2.0	51.86 .22	24.2 0.9
26.6	32.28 .15	65.7 0.7	11.16 .22	66.3 2.2	48.49 .24	27.1 2.0	52.06 .19	25.0 0.8
Nov. 5.5	32.42 .12	66.4 0.6	11.36 .17	68.5 2.2	48.70 .19	29.2 2.0	52.24 .16	25.7 0.7
15.5	32.52 .09	66.9 0.5	11.50 .12	70.7 2.1	48.88 .15	31.2 2.0	52.38 .13	26.3 0.6
25.5	32.59 .06	67.3 0.4	11.60 .07	72.8 2.0	49.00 .10	33.2 1.9	52.49 .09	26.9 0.5
Dec. 5.4	32.63 +.02	67.6 0.2	11.64 +.02	74.8 1.9	49.08 +.05	35.0 1.8	52.57 .05	27.3 0.4
15.4	32.64 −.01	67.8 +0.1	11.63 −.03	76.6 1.7	49.10 −.01	36.7 1.6	52.60 +.02	27.7 0.3
25.4	32.61 .05	67.9 0.0	11.57 .09	78.1 1.4	49.06 .06	38.3 1.4	52.60 −.02	28.0 0.2
35.4	32.54 −.08	67.8 −0.1	11.45 −.14	79.4 +1.1	48.97 −.12	39.6 +1.2	52.56 −.06	28.2 +0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Persei.		γ¹ Eridani.		γ Tauri.		ε Tauri.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 3 46	° ′ 31 29	h m 3 51	° ′ 13 52	h m 4 12	° ′ 15 18	h m 4 21	° ′ 18 53
	s	″	s	″	s	″	s	″
Jan. 0.4	1.60 −.05	54.4 +0.6	60.79 −.06	46.6 +1.5	27.27 −.02	47.9 −0.2	5.21 −.02	29.9 0.0
10.3	1.53 .09	54.9 0.4	60.71 .09	48.0 1.2	27.23 .06	47.6 0.2	5.17 .06	29.9 0.0
20.3	1.42 .13	55.2 +0.2	60.61 .12	49.1 1.0	27.15 .10	47.4 0.2	5.10 .09	29.8 −0.1
30.3	1.27 .16	55.3 0.0	60.48 .14	50.0 0.7	27.04 .13	47.2 0.2	4.99 .13	29.7 0.1
Feb. 9.3	1.10 .18	55.2 −0.2	60.32 .16	50.6 0.4	26.89 .15	47.0 0.2	4.84 .15	29.6 0.1
19.2	0.91 .19	55.0 0.3	60.15 .17	50.9 +0.2	26.73 .17	46.7 0.3	4.68 .17	29.4 0.2
Mar. 1.2	0.71 .19	54.6 0.5	59.97 .17	50.9 −0.1	26.56 .17	46.4 0.2	4.51 .18	29.2 0.2
11.2	0.52 .18	54.0 0.6	59.80 .17	50.6 0.4	26.39 .17	46.2 0.2	4.33 .17	28.9 0.2
21.2	0.35 .16	53.3 0.7	59.64 .15	50.0 0.7	26.23 .15	46.1 0.2	4.16 .16	28.7 0.2
31.1	0.21 .13	52.5 0.8	59.50 .13	49.1 1.0	26.09 .13	45.9 −0.1	4.01 .13	28.5 0.2
Apr. 10.1	0.10 .09	51.7 0.8	59.39 .09	47.9 1.3	25.97 .09	45.8 0.0	3.89 .10	28.3 0.2
20.1	0.03 −.04	50.9 0.8	59.31 .05	46.5 1.5	25.90 .05	45.8 +0.1	3.81 .06	28.1 −0.1
30.0	0.02 +.01	50.1 0.7	59.28 −.01	44.8 1.8	25.86 −.01	46.0 0.2	3.76 −.02	28.1 0.0
May 10.0	0.06 .07	49.5 0.6	59.29 +.04	42.9 2.0	25.87 +.03	46.3 0.3	3.77 +.03	28.1 +0.1
20.0	0.15 .12	49.0 0.4	59.35 .08	40.9 2.2	25.93 .08	46.7 0.5	3.82 .08	28.3 0.3
30.0	0.30 .17	48.7 −0.2	59.46 .13	38.6 2.3	26.04 .13	47.3 0.6	3.92 .12	28.7 0.4
June 8.9	0.49 .22	48.6 0.0	59.61 .17	36.3 2.4	26.19 .17	48.0 0.8	4.06 .17	29.2 0.6
18.9	0.73 .26	48.7 +0.2	59.79 .20	33.9 2.4	26.38 .21	48.9 0.9	4.25 .20	29.8 0.7
28.9	1.00 .29	49.0 0.4	60.01 .24	31.5 2.3	26.60 .24	49.8 1.0	4.47 .24	30.6 0.8
July 8.9	1.31 .31	49.5 0.6	60.26 .26	29.2 2.2	26.86 .27	50.9 1.1	4.73 .26	31.4 0.9
18.8	1.63 .33	50.2 0.8	60.54 .28	27.0 2.1	27.13 .29	52.1 1.2	5.00 .29	32.4 1.0
28.8	1.97 .34	51.1 1.0	60.82 .29	25.1 1.8	27.43 .30	53.3 1.2	5.30 .30	33.5 1.0
Aug. 7.8	2.32 .35	52.1 1.1	61.12 .30	23.3 1.6	27.74 .31	54.5 1.2	5.61 .31	34.5 1.0
17.7	2.67 .34	53.2 1.2	61.42 .30	21.9 1.2	28.04 .31	55.6 1.1	5.92 .31	35.5 1.0
27.7	3.01 .34	54.5 1.2	61.72 .29	20.9 0.9	28.35 .31	56.7 1.0	6.24 .31	36.5 1.0
Sept. 6.7	3.34 .33	55.7 1.3	62.00 .28	20.2 0.5	28.65 .30	57.7 0.9	6.55 .31	37.5 0.9
16.7	3.66 .31	57.0 1.3	62.28 .27	19.9 −0.1	28.95 .29	58.5 0.7	6.85 .30	38.3 0.8
26.6	3.96 .29	58.3 1.3	62.54 .25	20.1 +0.3	29.23 .27	59.2 0.6	7.14 .28	39.0 0.7
Oct. 6.6	4.24 .26	59.5 1.2	62.78 .23	20.6 0.7	29.49 .25	59.7 0.4	7.42 .27	39.6 0.5
16.6	4.49 .24	60.8 1.2	62.99 .20	21.5 1.0	29.74 .23	60.1 0.3	7.67 .25	40.1 0.4
26.6	4.71 .21	62.0 1.2	63.18 .17	22.6 1.3	29.96 .21	60.3 0.2	7.91 .22	40.5 0.3
Nov. 5.5	4.91 .18	63.1 1.1	63.34 .15	24.1 1.5	30.16 .18	60.4 +0.1	8.12 .20	40.7 0.2
15.5	5.07 .14	64.2 1.0	63.47 .11	25.7 1.7	30.33 .15	60.4 0.0	8.30 .17	40.9 0.1
25.5	5.19 .10	65.2 1.0	63.57 .08	27.4 1.8	30.47 .12	60.3 −0.1	8.45 .13	41.0 +0.1
Dec. 5.4	5.28 .06	66.1 0.9	63.63 .04	29.2 1.7	30.57 .08	60.2 0.1	8.57 .10	41.1 0.0
15.4	5.32 +.02	67.0 0.8	63.65 +.01	30.9 1.7	30.63 .05	60.0 0.2	8.64 .06	41.1 0.0
25.4	5.32 −.02	67.7 0.6	63.64 −.03	32.5 1.5	30.66 +.01	59.8 0.2	8.68 +.02	41.1 0.0
35.4	5.28 −.06	68.2 +0.5	63.59 −.06	34.0 +1.4	30.65 −.03	59.6 −0.2	8.67 −.03	41.1 0.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Tauri. (*Aldebaran.*)		*9 Camelopardalis.		ι Aurigæ.		11 Orionis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 4 28	° ′ 16 14	h m 4 41	° ′ 66 6	h m 4 48	° ′ 32 57	h m 4 57	° ′ 15 13
	s	″	s	″	s	″	s	″
Jan. 0.4	31.31 −.01	49.7 −0.2	15.45 −.08	74.6 +2.4	35.90 +.01	33.5 +0.8	12.16 +.01	17.3 −0.3
10.4	31.28 .05	49.5 0.2	15.32 .18	77.0 2.2	35.88 −.04	34.2 0.7	12.15 −.03	17.0 0.2
20.4	31.21 .09	49.4 0.2	15.09 .27	79.0 1.8	35.81 .09	34.9 0.6	12.10 .07	16.8 0.2
30.3	31.11 .12	49.2 0.2	14.78 .35	80.6 1.4	35.70 .13	35.4 0.4	12.01 .10	16.7 0.2
Feb. 9.3	30.97 .15	49.0 0.2	14.40 .41	81.9 1.0	35.55 .16	35.7 0.3	11.89 .14	16.5 0.1
19.3	30.81 .17	48.8 0.2	13.96 .45	82.6 +0.5	35.37 .19	35.9 +0.1	11.74 .16	16.4 0.1
Mar. 1.2	30.63 .17	48.6 0.2	13.50 .47	82.9 0.0	35.17 .20	35.9 −0.1	11.57 .17	16.3 0.1
11.2	30.46 .17	48.4 0.2	13.03 .46	82.7 −0.5	34.97 .20	35.7 0.3	11.39 .18	16.2 0.1
21.2	30.29 .16	48.2 0.2	12.57 .44	82.0 0.9	34.77 .19	35.4 0.4	11.21 .17	16.1 −0.1
31.2	30.14 .14	48.1 −0.1	12.15 .39	80.8 1.3	34.58 .17	34.9 0.5	11.05 .15	16.0 0.0
Apr. 10.1	30.01 .11	48.0 0.0	11.80 .32	79.3 1.7	34.43 .14	34.3 0.6	10.91 .12	16.0 0.0
20.1	29.92 .07	48.0 0.0	11.52 .23	77.5 1.9	34.30 .10	33.7 0.7	10.80 .09	16.1 +0.1
30.1	29.88 −.03	48.1 +0.1	11.33 .14	75.5 2.1	34.23 −.05	33.0 0.7	10.73 −.05	16.2 0.2
May 10.1	29.87 +.02	48.3 0.3	11.24 −.04	73.3 2.2	34.21 .00	32.3 0.6	10.70 .00	16.5 0.3
20.0	29.92 .07	48.6 0.4	11.25 +.06	71.1 2.2	34.24 +.05	31.7 0.6	10.72 +.04	16.8 0.4
30.0	30.01 .11	49.1 0.5	11.36 .17	68.8 2.2	34.32 .11	31.2 0.5	10.78 .09	17.3 0.5
June 9.0	30.14 .16	49.7 0.7	11.58 .27	66.7 2.0	34.45 .16	30.7 0.4	10.89 .13	17.9 0.7
18.9	30.32 .20	50.5 0.8	11.90 .36	64.7 1.9	34.63 .20	30.4 0.2	11.04 .17	18.6 0.8
28.9	30.53 .23	51.3 0.9	12.29 .44	63.0 1.6	34.85 .24	30.3 −0.1	11.23 .21	19.4 0.9
July 8.9	30.78 .26	52.3 1.0	12.77 .51	61.5 1.3	35.11 .28	30.3 +0.1	11.45 .24	20.3 0.9
18.9	31.05 .28	53.3 1.1	13.31 .56	60.3 1.0	35.40 .30	30.5 0.2	11.70 .26	21.3 1.0
28.8	31.34 .29	54.4 1.1	13.90 .61	59.5 0.7	35.72 .32	30.8 0.4	11.97 .28	22.3 1.0
Aug. 7.8	31.64 .30	55.5 1.1	14.53 .64	59.0 −0.3	36.05 .34	31.2 0.5	12.26 .29	23.2 0.9
17.8	31.95 .31	56.5 1.0	15.18 .66	58.8 0.0	36.39 .35	31.8 0.6	12.56 .30	24.1 0.9
27.8	32.26 .31	57.5 0.9	15.86 .67	59.1 +0.4	36.74 .35	32.4 0.7	12.86 .30	25.0 0.8
Sept. 6.7	32.56 .30	58.4 0.8	16.53 .67	59.6 0.7	37.09 .35	33.1 0.7	13.17 .30	25.7 0.6
16.7	32.86 .29	59.1 0.7	17.20 .66	60.5 1.1	37.44 .34	33.8 0.7	13.47 .30	26.3 0.5
26.7	33.15 .28	59.7 0.5	17.85 .64	61.8 1.4	37.77 .33	34.6 0.8	13.77 .29	26.7 0.4
Oct. 6.6	33.43 .27	60.2 0.4	18.47 .60	63.3 1.7	38.10 .32	35.4 0.8	14.06 .28	27.0 0.2
16.6	33.68 .25	60.5 0.3	19.06 .56	65.2 2.0	38.41 .30	36.2 0.8	14.33 .27	27.2 +0.1
26.6	33.92 .22	60.7 +0.1	19.59 .51	67.3 2.2	38.70 .28	37.0 0.8	14.59 .25	27.2 0.0
Nov. 5.6	34.13 .20	60.8 0.0	20.07 .44	69.6 2.4	38.96 .25	37.8 0.8	14.83 .22	27.1 −0.1
15.5	34.32 .17	60.8 0.0	20.48 .37	72.1 2.6	39.20 .22	38.7 0.9	15.04 .20	26.9 0.2
25.5	34.48 .14	60.7 −0.1	20.81 .29	74.8 2.7	39.40 .18	39.6 0.9	15.22 .17	26.6 0.2
Dec. 5.5	34.60 .10	60.6 0.1	21.05 .19	77.5 2.7	39.56 .14	40.4 0.9	15.37 .13	26.4 0.3
15.5	34.68 .06	60.5 0.1	21.20 +.09	80.2 2.7	39.67 .09	41.3 0.8	15.48 .09	26.1 0.3
25.4	34.72 +.02	60.3 0.2	21.24 −.01	82.8 2.5	39.74 +.04	42.1 0.8	15.55 +.05	25.8 0.3
35.4	34.72 −.02	60.1 −0.2	21.18 −.11	85.2 +2.3	39.76 −.01	42.9 +0.7	15.58 .00	25.6 −0.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Aurigæ. (*Capella.*)		β Orionis. (*Rigel.*)		β Tauri.		*Groombridge 966.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 5 7	° ′ 45 51	h m 5 8	° ′ 8 20	h m 5 18	° ′ 28 29	h m 5 22	° ′ 74 56
	s	″	s	″	s	″	s	″
Jan. 0.4	10.13 +.02	50.3 +1.5	20.65 +.01	75.5 +1.5	8.52 +.04	43.8 +0.5	32.08 −.02	71.5 +2.9
10.4	10.12 −.04	51.7 1.4	20.64 −.03	76.9 1.4	8.54 −.01	44.3 0.5	31.97 .19	74.4 2.7
20.4	10.05 .10	53.1 1.2	20.59 .07	78.2 1.2	8.50 .06	44.7 0.4	31.70 .35	77.0 2.4
30.4	9.93 .15	54.2 1.0	20.50 .11	79.3 0.9	8.42 .10	45.1 0.4	31.29 .48	79.3 2.1
Feb. 9.3	9.75 .19	55.0 0.7	20.37 .14	80.1 0.7	8.29 .14	45.5 0.3	30.74 .60	81.1 1.6
19.3	9.54 .23	55.6 0.5	20.22 .16	80.7 0.5	8.14 .17	45.7 0.2	30.09 .69	82.6 1.2
Mar. 1.3	9.30 .25	55.9 +0.1	20.05 .18	81.0 +0.2	7.95 .19	45.9 +0.1	29.37 .74	83.5 0.6
11.2	9.04 .25	55.9 −0.2	19.87 .18	81.1 −0.1	7.76 .20	45.9 0.0	28.61 .76	83.8 +0.1
21.2	8.79 .25	55.6 0.4	19.68 .18	80.9 0.3	7.56 .19	45.8 −0.2	27.86 .74	83.6 −0.4
31.2	8.55 .22	55.0 0.7	19.51 .16	80.5 0.5	7.38 .18	45.6 0.3	27.13 .69	82.9 0.9
Apr. 10.2	8.34 .19	54.2 0.9	19.36 .14	79.8 0.8	7.21 .14	45.2 0.4	26.47 .61	81.7 1.4
20.1	8.18 .14	53.2 1.1	19.24 .11	78.9 1.1	7.08 .11	44.8 0.4	25.91 .50	80.1 1.8
30.1	8.06 .09	52.0 1.2	19.15 .07	77.7 1.3	6.99 .07	44.4 0.4	25.47 .37	78.1 2.1
May 10.1	8.00 −.03	50.7 1.3	19.10 −.03	76.4 1.5	6.94 −.02	44.0 0.4	25.16 .23	75.8 2.4
20.1	8.00 +.03	49.4 1.3	19.09 +.01	74.8 1.7	6.94 +.02	43.7 0.4	25.00 −.08	73.4 2.5
30.0	8.07 .10	48.2 1.2	19.13 .06	73.1 1.8	6.98 .07	43.3 0.3	25.00 +.07	70.8 2.6
June 9.0	8.20 .15	46.9 1.2	19.21 .10	71.2 1.9	7.08 .12	43.1 0.2	25.15 .23	68.3 2.5
19.0	8.38 .21	45.8 1.0	19.33 .14	69.2 2.0	7.23 .17	42.9 −0.1	25.46 .37	65.8 2.4
28.9	8.62 .26	44.9 0.9	19.49 .18	67.2 2.0	7.41 .21	42.9 0.0	25.90 .51	63.4 2.3
July 8.9	8.90 .30	44.1 0.7	19.68 .21	65.2 2.0	7.64 .24	43.0 +0.1	26.48 .63	61.2 2.0
18.9	9.22 .34	43.5 0.5	19.90 .23	63.2 1.9	7.90 .27	43.2 0.2	27.17 .74	59.3 1.8
28.9	9.58 .37	43.1 0.3	20.15 .25	61.4 1.7	8.18 .29	43.4 0.3	27.96 .84	57.7 1.4
Aug. 7.8	9.96 .39	42.9 −0.1	20.41 .27	59.7 1.5	8.48 .31	43.8 0.4	28.84 .91	56.4 1.1
17.8	10.35 .40	42.9 +0.1	20.69 .28	58.3 1.3	8.80 .32	44.2 0.4	29.78 .97	55.5 0.7
27.8	10.76 .41	43.1 0.3	20.97 .29	57.1 1.0	9.13 .33	44.6 0.4	30.78 1.01	54.9 −0.3
Sept. 6.8	11.18 .41	43.5 0.5	21.26 .29	56.3 0.6	9.46 .33	45.1 0.5	31.80 1.03	54.8 0.0
16.7	11.59 .41	44.0 0.6	21.55 .29	55.8 −0.3	9.80 .33	45.5 0.5	32.83 1.03	55.0 +0.5
26.7	12.00 .40	44.7 0.8	21.83 .28	55.7 +0.1	10.13 .33	46.0 0.4	33.87 1.02	55.7 0.8
Oct. 6.7	12.40 .39	45.6 0.9	22.11 .27	56.0 0.5	10.46 .32	46.4 0.4	34.88 .99	56.7 1.2
16.6	12.78 .37	46.6 1.1	22.37 .25	56.7 0.8	10.77 .31	46.8 0.4	35.85 .94	58.2 1.6
26.6	13.14 .35	47.7 1.2	22.62 .24	57.6 1.1	11.07 .29	47.2 0.4	36.76 .87	59.9 1.9
Nov. 5.6	13.47 .31	49.0 1.3	22.85 .22	58.9 1.3	11.35 .27	47.6 0.4	37.59 .78	62.1 2.3
15.6	13.77 .28	50.4 1.4	23.05 .19	60.3 1.5	11.60 .24	48.1 0.4	38.33 .67	64.5 2.6
25.5	14.02 .23	51.9 1.5	23.22 .16	61.9 1.6	11.82 .21	48.5 0.5	38.95 .55	67.2 2.8
Dec. 5.5	14.23 .18	53.4 1.6	23.36 .12	63.6 1.7	12.01 .17	49.0 0.5	39.43 .41	70.0 2.9
15.5	14.39 .13	55.0 1.6	23.47 .08	65.3 1.7	12.16 .12	49.4 0.5	39.76 .25	73.0 3.0
25.5	14.48 .07	56.5 1.5	23.53 +.04	67.0 1.6	12.26 .07	49.9 0.5	39.94 +.09	76.0 3.0
35.4	14.52 +.01	58.0 +1.5	23.55 .00	68.5 +1.5	12.31 +.02	50.5 +0.5	39.94 −.08	78.9 +2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Orionis.		α Leporis.		ε Orionis.		α Columbæ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 5 25	° ′ 0 23	h m 5 27	° ′ 17 54	h m 5 29	° ′ 1 17	h m 5 34	° ′ 34 8
	s	″	s	″	s	″	s	″
Jan. 0.4	25.32 +.03	53.1 +1.2	3.01 +.02	65.0 +2.1	40.39 +.03	15.5 +1.2	59.61 .00	45.9 +2.7
10.4	25.33 −.01	54.3 1.1	3.00 −.03	67.0 1.9	40.41 −.01	16.7 1.1	59.58 −.05	48.5 2.5
20.4	25.30 .05	55.2 0.9	2.95 .07	68.7 1.6	40.38 .05	17.8 1.0	59.50 .10	50.9 2.2
30.4	25.23 .09	56.1 0.7	2.86 .11	70.2 1.3	40.31 .09	18.6 0.8	59.37 .15	52.9 1.8
Feb. 9.3	25.12 .13	56.7 0.6	2.73 .15	71.4 1.0	40.20 .12	19.3 0.6	59.21 .18	54.5 1.4
19.3	24.97 .15	57.2 0.4	2.57 .17	72.2 0.7	40.06 .15	19.8 0.4	59.00 .21	55.7 1.0
Mar. 1.3	24.81 .17	57.5 +0.2	2.39 .19	72.8 +0.4	39.89 .17	20.2 +0.2	58.78 .23	56.4 0.5
11.3	24.64 .18	57.6 0.0	2.19 .20	72.9 0.0	39.72 .18	20.3 0.0	58.54 .24	56.7 +0.1
21.2	24.46 .17	57.5 −0.2	2.00 .19	72.8 −0.3	39.54 .18	20.2 −0.2	58.30 .24	56.6 −0.4
31.2	24.29 .16	57.3 0.3	1.81 .18	72.3 0.6	39.37 .16	19.9 0.3	58.06 .23	55.9 0.8
Apr. 10.2	24.14 .14	56.9 0.5	1.63 .16	71.5 1.0	39.21 .14	19.5 0.5	57.84 .21	54.9 1.2
20.1	24.01 .11	56.2 0.7	1.49 .13	70.3 1.3	39.08 .11	18.9 0.7	57.65 .18	53.5 1.6
30.1	23.91 .08	55.4 0.9	1.37 .09	68.9 1.5	38.99 .08	18.0 0.9	57.49 .14	51.7 2.0
May 10.1	23.86 −.04	54.5 1.0	1.30 .05	67.3 1.8	38.93 −.04	17.1 1.1	57.37 .10	49.5 2.3
20.1	23.84 +.01	53.4 1.2	1.26 −.01	65.3 2.0	38.91 .00	15.9 1.2	57.30 −.05	47.1 2.6
30.0	23.87 .05	52.1 1.3	1.27 +.03	63.2 2.2	38.93 +.04	14.6 1.4	57.27 .00	44.4 2.8
June 9.0	23.94 .09	50.7 1.5	1.32 .07	60.9 2.3	39.00 .09	13.1 1.5	57.30 +.05	41.5 2.9
19.0	24.05 .13	49.2 1.5	1.42 .12	58.6 2.4	39.10 .13	11.6 1.6	57.37 .09	38.5 3.0
29.0	24.20 .17	47.6 1.6	1.56 .15	56.1 2.4	39.25 .16	10.0 1.6	57.48 .14	35.5 3.0
July 8.9	24.38 .20	46.0 1.6	1.73 .19	53.7 2.4	39.43 .19	8.3 1.6	57.64 .18	32.5 2.9
18.9	24.60 .23	44.4 1.5	1.93 .22	51.4 2.2	39.64 .22	6.7 1.6	57.84 .22	29.7 2.7
28.9	24.84 .25	42.9 1.4	2.16 .24	49.3 2.1	39.87 .24	5.2 1.5	58.07 .25	27.1 2.5
Aug. 7.8	25.09 .26	41.5 1.3	2.42 .26	47.3 1.8	40.13 .26	3.8 1.3	58.34 .27	24.7 2.2
17.8	25.36 .28	40.3 1.1	2.69 .28	45.7 1.5	40.39 .27	2.6 1.1	58.62 .29	22.7 1.8
27.8	25.65 .28	39.3 0.9	2.97 .29	44.3 1.1	40.67 .28	1.5 0.9	58.92 .31	21.1 1.3
Sept. 6.8	25.93 .29	38.5 0.6	3.26 .29	43.4 0.7	40.96 .29	0.8 0.6	59.24 .32	20.1 0.8
16.7	26.22 .29	38.1 −0.3	3.56 .29	42.9 −0.3	41.25 .29	0.3 −0.3	59.56 .32	19.6 −0.2
26.7	26.51 .28	37.9 0.0	3.85 .29	42.9 +0.2	41.54 .29	0.2 0.0	59.88 .32	19.6 +0.3
Oct. 6.7	26.79 .28	38.1 +0.3	4.13 .28	43.3 0.6	41.82 .28	0.3 +0.3	60.19 .31	20.2 0.9
16.7	27.07 .27	38.5 0.6	4.41 .27	44.2 1.1	42.10 .27	0.8 0.6	60.50 .29	21.3 1.4
26.6	27.33 .25	39.2 0.8	4.67 .25	45.5 1.4	42.36 .25	1.5 0.9	60.78 .27	23.0 1.9
Nov. 5.6	27.57 .23	40.1 1.0	4.91 .23	47.1 1.7	42.61 .23	2.5 1.1	61.04 .25	25.0 2.3
15.6	27.79 .21	41.2 1.2	5.13 .20	48.9 2.0	42.83 .21	3.6 1.2	61.28 .21	27.5 2.6
25.5	27.99 .18	42.4 1.3	5.32 .17	51.0 2.1	43.02 .18	4.9 1.3	61.47 .17	30.2 2.8
Dec. 5.5	28.15 .14	43.7 1.3	5.47 .13	53.2 2.2	43.19 .15	6.3 1.4	61.62 .13	33.1 2.9
15.5	28.27 .11	45.1 1.3	5.58 .09	55.5 2.2	43.32 .11	7.7 1.4	61.73 .08	36.0 2.9
25.5	28.36 .06	46.3 1.2	5.65 +.05	57.7 2.1	43.41 .07	9.0 1.3	61.79 +.03	38.9 2.8
35.4	28.40 +.02	47.5 +1.1	5.67 .00	59.8 +2.0	43.45 +.02	10.3 +1.2	61.79 −.02	41.6 +2.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*a* Orionis.		*22 Camelopardalis.		*μ* Geminorum.		*a* Argus. (*Canopus.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 5 48	° ′ 7 22	h m 6 4	° ′ 69 21	h m 6 15	° ′ 22 34	h m 6 21	° ′ 52 37
	s	″	s	″	s	″	s	″
Jan. 0.5	11.59 +.06	47.5 −0.8	39.09 +.12	38.1 +2.7	9.66 +.10	36.4 0.0	6.22 +.01	37.4 +3.4
10.5	11.62 +.01	46.8 0.7	39.15 .00	40.8 2.6	9.73 +.05	36.5 +0.1	6.19 −.06	40.8 3.2
20.4	11.62 −.03	46.1 0.6	39.08 −.13	43 4 2.5	9.76 .00	36.7 0.2	6.09 .13	43.8 2.9
30.4	11.56 .07	45.6 0.5	38.90 .24	45.8 2.3	9.73 −.05	36.9 0.2	5.93 .20	46.6 2.6
Feb. 9.4	11.47 .11	45.2 0.3	38.60 .35	47.9 1.9	9.65 .10	37.2 0.3	5.70 .25	49.0 2.2
19.3	11.34 .14	44.9 0.2	38.20 .43	49.6 1.5	9.53 .13	37.5 0.3	5.42 .30	51.0 1.7
Mar. 1.3	11.19 .16	44.7 −0.1	37.73 .49	50.9 1.1	9.38 .16	37.7 0.2	5.11 .33	52.4 1.2
11.3	11.01 .17	44.7 0.0	37.21 .53	51.8 0.6	9.21 .18	37.9 0.2	4.76 .35	53.3 0.7
21.3	10.84 .17	44.7 +0.1	36.67 .54	52.1 +0.1	9.02 .18	38.1 0.1	4.40 .36	53.8 +0.2
31.2	10.66 .17	44.9 0.2	36.13 .52	52.0 −0.4	8.84 .18	38.2 +0.1	4.04 .36	53.7 −0.4
Apr. 10.2	10.50 .15	45.1 0.3	35.62 .48	51.3 0.9	8.66 .16	38.3 0.0	3.69 .34	53.0 0.9
20.2	10.37 .12	45.5 0.4	35.17 .42	50.3 1.3	8.51 .14	38.3 0.0	3.36 .31	51.9 1.3
30.2	10.26 .09	45.9 0.5	34.78 .34	48.8 1.6	8.38 .11	38.3 0.0	3.07 .27	50.3 1.8
May 10.1	10.20 .05	46.5 0.6	34.49 .24	47.0 1.9	8.29 .07	38.2 0.0	2.82 .23	48.3 2.2
20.1	10.17 −.01	47.2 0.8	34.30 .13	44.9 2.2	8.25 −.03	38.2 0.0	2.61 .18	45.9 2.6
30.1	10.18 +.03	48.0 0.9	34.22 −.02	42.7 2.3	8.24 +.02	38.2 0.0	2.47 .12	43.1 2.9
June 9.0	10.24 .08	48.9 1.0	34.25 +.09	40.3 2.4	8.28 .06	38.2 0.0	2.37 −.06	40.1 3.1
19.0	10.33 .12	50.0 1.0	34.40 .20	37.9 2.4	8.36 .10	38.2 +0.1	2.35 .00	36.9 3.3
29.0	10.47 .15	51.0 1.1	34.65 .30	35.6 2.3	8.49 .14	38.3 0.1	2.38 +.06	33.6 3.3
July 9.0	10.64 .19	52.1 1.1	35.00 .39	33.3 2.2	8.65 .18	38.5 0.2	2.47 .12	30.2 3.3
18.9	10.84 .21	53.3 1.1	35.44 .49	31.2 2.0	8.85 .21	38.7 0.2	2.62 .18	27.0 3.2
28.9	11.07 .24	54.4 1.1	35.97 .56	29.3 1.8	9.07 .24	38.9 0.2	2.83 .23	23.8 3.0
Aug. 7.9	11.32 .26	55.4 1.0	36.57 .63	27.7 1.5	9.33 .26	39.1 0.2	3.08 .28	21.0 2.7
17.9	11.58 .27	56.3 0.8	37.23 .68	26.3 1.2	9.60 .28	39.3 0.2	3.38 .32	18.4 2.3
27.8	11.86 .28	57.1 0.7	37.94 .73	25.3 0.9	9.89 .30	39.4 0.1	3.72 .35	16.4 1.8
Sept. 6.8	12.15 .29	57.7 0.5	38.68 .76	24.5 0.6	10.19 .31	39.6 +0.1	4.08 .38	14.8 1.3
16.8	12.45 .29	58.0 +0.3	39.45 .78	24.1 −0.2	10.51 .32	39.6 0.0	4.48 .40	13.8 −0.7
26.7	12.74 .29	58.2 0.0	40.24 .78	24.1 +0.2	10.83 .32	39.6 −0.1	4.88 .41	13.5 0.0
Oct. 6.7	13.03 .29	58.1 −0.2	41.02 .78	24.4 0.5	11.15 .32	39.5 0.1	5.29 .41	13.7 +0.6
16.7	13.32 .28	57.8 0.4	41.79 .76	25.1 0.9	11.47 .31	39.3 0.2	5.69 .39	14.6 1.2
26.7	13.60 .27	57.3 0.6	42.54 .73	26.2 1.2	11.78 .31	39.1 0.2	6.08 .37	16.2 1.8
Nov. 5.6	13.86 .26	56.6 0.7	43.25 .68	27.6 1.6	12.09 .30	38.8 0.2	6.44 .34	18.3 2.3
15.6	14.11 .23	55.8 0.8	43.90 .61	29.4 1.9	12.38 .28	38.6 0.2	6.76 .30	20.8 2.8
25.6	14.33 .20	54.9 0.9	44.47 .53	31.4 2.2	12.64 .25	38.4 0.2	7.04 .25	23.8 3.1
Dec. 5.6	14.52 .17	54.0 0.9	44.96 .44	33.8 2.4	12.88 .22	38.2 0.1	7.26 .19	27.1 3.3
15.5	14.67 .13	53.1 0.9	45.35 .33	36.3 2.6	13.08 .18	38.1 −0.1	7.42 .12	30.5 3.5
25.5	14.79 .09	52.2 0.8	45.62 .21	38.9 2.7	13.23 .13	38.0 0.0	7.51 +.05	34.0 3.5
35.5	14.86 +.05	51.4 −0.8	45.77 +.09	41.7 +2.7	13.34 +.08	38.1 +0.1	7.53 −.02	37.5 +3.4

NOTE.—The R. A. of *a* Argus is 1ˢ too small.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Geminorum.		α Canis Majoris. (*Sirius.*)		ε Canis Majoris.		δ Canis Majoris.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 6 30	° ′ 16 30	h m 6 39	° ′ 16 32	h m 6 53	° ′ 28 47	h m 7 3	° ′ 26 11
	s	″	s	″	s	″	s	″
Jan. 0.5	15.86 +.11	23.4 −0.4	28.23 +.09	30.8 +2.3	34.23 +.09	54.1 +2.9	9.55 +.10	23.1 +2.8
10.5	15.94 .06	23.1 0.2	28.29 +.04	33.0 2.2	34.30 +.04	57.0 2.7	9.63 +.05	25.8 2.7
20.5	15.97 +.01	22.9 0.1	28.31 −.01	35.1 2.0	34.31 −.01	59.6 2.5	9.66 .00	28.4 2.5
30.4	15.96 −.04	22.8 −0.1	28.27 .06	37.0 1.7	34.27 .06	62.0 2.2	9.63 −.05	30.7 2.2
Feb. 9.4	15.90 .08	22.8 0.0	28.19 .10	38.5 1.4	34.18 .11	64.1 1.9	9.56 .10	32.8 1.9
19.4	15.79 .12	22.9 +0.1	28.07 .14	39.8 1.1	34.05 .15	65.8 1.6	9.44 .14	34.5 1.6
Mar. 1.3	15.65 .15	23.0 0.1	27.92 .16	40.8 0.8	33.88 .18	67.2 1.2	9.28 .17	35.9 1.2
11.3	15.49 .17	23.1 0.2	27.74 .18	41.4 0.5	33.68 .20	68.2 0.8	9.10 .19	36.9 0.8
21.3	15.31 .18	23.3 0.2	27.55 .19	41.8 +0.2	33.47 .22	68.7 +0.4	8.90 .21	37.5 +0.4
31.3	15.14 .17	23.5 0.2	27.36 .19	41.8 −0.2	33.24 .22	68.9 −0.1	8.68 .21	37.7 0.0
Apr. 10.2	14.96 .16	23.6 0.2	27.17 .18	41.4 0.5	33.03 .21	68.6 0.5	8.47 .20	37.5 −0.4
20.2	14.81 .14	23.8 0.2	27.00 .16	40.8 0.8	32.82 .20	68.0 0.8	8.27 .19	36.9 0.7
30.2	14.68 .11	24.0 0.2	26.84 .14	39.9 1.1	32.64 .17	66.9 1.2	8.10 .17	36.0 1.1
May 10.2	14.59 .08	24.2 0.2	26.72 .10	38.7 1.3	32.48 .14	65.5 1.6	7.94 .14	34.7 1.4
20.1	14.53 −.04	24.5 0.3	26.63 .07	37.2 1.6	32.36 .10	63.8 1.9	7.82 .10	33.1 1.7
30.1	14.51 .00	24.8 0.3	26.58 −.03	35.5 1.8	32.28 .06	61.8 2.1	7.74 .07	31.2 2.0
June 9.1	14.53 +.04	25.1 0.4	26.57 +.01	33.6 1.9	32.23 −.02	59.5 2.4	7.69 −.03	29.1 2.2
19.0	14.60 .08	25.5 0.4	26.60 .05	31.6 2.1	32.23 +.02	57.1 2.5	7.68 +.01	26.8 2.4
29.0	14.70 .12	25.9 0.4	26.67 .08	29.5 2.1	32.27 .06	54.5 2.6	7.72 .05	24.3 2.5
July 9.0	14.85 .16	26.4 0.5	26.77 .12	27.3 2.1	32.35 .10	51.8 2.6	7.79 .09	21.8 2.5
19.0	15.02 .19	26.8 0.5	26.91 .15	25.2 2.1	32.47 .14	49.2 2.6	7.90 .13	19.3 2.5
28.9	15.22 .22	27.3 0.4	27.08 .18	23.2 2.0	32.62 .17	46.6 2.5	8.05 .16	16.8 2.4
Aug. 7.9	15.46 .24	27.7 0.4	27.28 .21	21.3 1.8	32.81 .20	44.2 2.3	8.23 .19	14.5 2.2
17.9	15.71 .26	28.1 0.3	27.50 .23	19.6 1.5	33.03 .23	42.1 2.0	8.43 .22	12.4 1.9
27.9	15.98 .28	28.4 0.2	27.75 .25	18.3 1.2	33.27 .26	40.3 1.6	8.67 .24	10.7 1.6
Sept. 6.8	16.26 .29	28.5 +0.1	28.01 .27	17.3 0.8	33.54 .28	38.9 1.2	8.92 .27	9.3 1.1
16.8	16.56 .30	28.6 0.0	28.29 .28	16.6 −0.4	33.83 .29	38.0 0.7	9.20 .29	8.4 0.7
26.8	16.87 .31	28.5 −0.1	28.57 .29	16.4 0.0	34.13 .31	37.5 −0.2	9.49 .30	8.0 −0.2
Oct. 6.7	17.18 .31	28.3 0.3	28.87 .29	16.7 +0.5	34.44 .31	37.6 +0.4	9.80 .31	8.0 +0.3
16.7	17.49 .31	27.9 0.4	29.16 .29	17.4 0.9	34.75 .31	38.3 0.9	10.11 .31	8.6 0.8
26.7	17.80 .30	27.5 0.5	29.46 .29	18.5 1.3	35.06 .31	39.4 1.4	10.42 .31	9.7 1.3
Nov. 5.7	18.10 .29	26.9 0.6	29.74 .28	20.0 1.7	35.37 .30	41.1 1.8	10.73 .30	11.3 1.8
15.6	18.39 .28	26.3 0.6	30.01 .26	21.8 2.0	35.66 .28	43.1 2.2	11.02 .28	13.2 2.1
25.6	18.65 .25	25.7 0.6	30.26 .23	24.0 2.2	35.92 .25	45.5 2.5	11.29 .26	15.6 2.4
Dec. 5.6	18.89 .22	25.1 0.6	30.48 .20	26.2 2.3	36.15 .22	48.2 2.8	11.53 .22	18.1 2.7
15.6	19.10 .18	24.5 0.5	30.66 .16	28.6 2.4	36.35 .17	51.1 2.9	11.73 .18	20.9 2.8
25.5	19.26 .14	24.0 0.4	30.80 .12	31.0 2.4	36.50 .13	54.0 2.9	11.89 .14	23.7 2.8
35.5	19.38 +.09	23.7 −0.3	30.90 +.08	33.3 +2.3	36.60 +.08	56.9 +2.8	12.01 +.09	26.5 +2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Geminorum.		* Piazzi vii. 67.		α Geminorum. (*Castor.*)		α Canis Minoris. (*Procyon.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$7^{h}\ 12^{m}$	$22°\ 12'$	$7^{h}\ 17^{m}$	$68°\ 43'$	$7^{h}\ 26^{m}$	$32°\ 9'$	$7^{h}\ 32^{m}$	$5°\ 33'$
	s	″	s	″	s	″	s	″
Jan. 0.5	25.32 +.16	61.1 −0.1	27.67 +.32	25.2 +2.5	21.96 +.19	64.8 +0.4	33.25 +.16	11.4 −1.3
10.5	25.46 .11	61.0 0.0	27.93 .20	27.7 2.6	22.12 .13	65.3 0.6	33.38 .11	10.2 1.1
20.5	25.54 +.05	61.1 +0.1	28.06 +.07	30.4 2.6	22.22 .07	65.9 0.7	33.47 .06	9.2 0.9
30.5	25.56 .00	61.3 0.3	28.07 −.06	33.0 2.6	22.26 +.02	66.7 0.8	33.50 +.01	8.3 0.8
Feb. 9.4	25.54 −.05	61.6 0.3	27.94 .18	35.6 2.4	22.25 −.04	67.6 0.9	33.49 −.04	7.7 0.6
19.4	25.46 .09	62.0 0.4	27.71 .29	37.9 2.2	22.19 .09	68.5 0.9	33.43 .08	7.2 0.4
Mar. 1.4	25.35 .13	62.4 0.4	27.37 .38	39.9 1.8	22.07 .13	69.3 0.8	33.33 .11	6.9 0.2
11.3	25.20 .16	62.8 0.4	26.95 .45	41.6 1.5	21.92 .16	70.1 0.7	33.20 .14	6.7 −0.1
21.3	25.03 .17	63.2 0.4	26.48 .49	42.8 1.0	21.75 .18	70.8 0.6	33.05 .16	6.7 +0.1
31.3	24.85 .18	63.6 0.3	25.97 .51	43.6 +0.5	21.55 .20	71.4 0.5	32.88 .17	6.8 0.2
Apr. 10.3	24.67 .17	63.9 0.3	25.46 .50	43.9 0.0	21.35 .19	71.7 0.3	32.72 .16	7.0 0.3
20.2	24.50 .16	64.1 0.2	24.97 .47	43.6 −0.5	21.17 .18	72.0 +0.1	32.55 .15	7.4 0.4
30.2	24.36 .13	64.3 0.2	24.51 .42	42.9 0.9	21.00 .16	72.0 0.0	32.41 .14	7.8 0.5
May 10.2	24.24 .10	64.4 0.1	24.12 .35	41.8 1.3	20.85 .13	71.9 −0.2	32.28 .11	8.3 0.6
20.2	24.15 .07	64.5 +0.1	23.80 .27	40.3 1.7	20.74 .09	71.7 0.3	32.19 .08	8.9 0.6
30.1	24.10 −.03	64.5 0.0	23.57 .18	38.4 2.0	20.67 .05	71.3 0.4	32.12 .05	9.6 0.7
June 9.1	24.09 +.01	64.5 0.0	23.44 −.08	36.3 2.2	20.65 −.01	70.9 0.5	32.09 −.01	10.4 0.8
19.1	24.12 .05	64.5 0.0	23.40 +.02	34.0 2.4	20.66 +.04	70.3 0.6	32.10 +.02	11.2 0.8
29.0	24.18 .09	64.5 0.0	23.47 .12	31.6 2.5	20.72 .08	69.7 0.6	32.13 .06	12.0 0.8
July 9.0	24.29 .12	64.5 0.0	23.63 .21	29.1 2.5	20.81 .12	69.1 0.6	32.21 .09	12.9 0.9
19.0	24.43 .16	64.5 0.0	23.89 .31	26.6 2.5	20.95 .15	68.4 0.7	32.31 .12	13.8 0.8
29.0	24.61 .19	64.4 −0.1	24.25 .40	24.2 2.4	21.12 .19	67.7 0.7	32.45 .15	14.6 0.8
Aug. 7.9	24.81 .22	64.3 0.1	24.68 .47	21.8 2.2	21.33 .22	67.0 0.7	32.62 .18	15.3 0.7
17.9	25.04 .24	64.2 0.2	25.19 .54	19.7 2.1	21.56 .25	66.3 0.7	32.81 .20	15.9 0.5
27.9	25.29 .26	64.0 0.2	25.77 .61	17.7 1.9	21.83 .28	65.6 0.7	33.02 .22	16.3 0.3
Sept. 6.9	25.56 .28	63.7 0.3	26.41 .66	15.9 1.6	22.12 .30	64.9 0.7	33.25 .25	16.6 +0.1
16.8	25.86 .30	63.4 0.4	27.09 .71	14.5 1.3	22.42 .32	64.1 0.7	33.51 .26	16.6 −0.1
26.8	26.16 .31	62.9 0.5	27.82 .74	13.3 1.0	22.75 .33	63.4 0.7	33.78 .28	16.4 0.3
Oct. 6.8	26.48 .32	62.4 0.6	28.57 .76	12.5 0.6	23.09 .35	62.6 0.7	34.07 .29	15.9 0.6
16.7	26.81 .33	61.8 0.6	29.34 .77	12.0 −0.3	23.44 .36	61.9 0.7	34.37 .30	15.2 0.8
26.7	27.14 .33	61.2 0.7	30.12 .77	12.0 +0.1	23.80 .36	61.3 0.6	34.67 .31	14.3 1.0
Nov. 5.7	27.46 .32	60.5 0.7	30.88 .75	12.3 0.5	24.17 .36	60.7 0.5	34.98 .30	13.1 1.2
15.7	27.78 .31	59.8 0.6	31.62 .72	13.1 0.9	24.52 .35	60.2 0.4	35.28 .30	11.9 1.3
25.6	28.09 .30	50.2 0.6	32.31 .66	14.2 1.3	24.87 .33	59.9 0.3	35.57 .28	10.5 1.4
Dec. 5.6	28.38 .27	58.7 0.5	32.94 .59	15.8 1.7	25.19 .30	59.7 −0.1	35.84 .26	9.0 1.4
15.6	28.63 .23	58.2 0.4	33.50 .50	17.6 2.0	25.47 .27	59.7 +0.1	36.09 .23	7.6 1.4
25.6	28.84 .19	57.9 0.2	33.95 .40	19.8 2.3	25.72 .22	59.9 0.3	36.30 .19	6.2 1.3
35.5	29.01 +.14	57.7 −0.1	34.29 +.28	22.3 +2.5	25.92 +.17	60.3 +0.5	36.46 +.14	4.9 −1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Geminorum. (*Pollux.*)		φ Geminorum.		*3 Ursæ Majoris (H.)		15 Argus (ι.)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 7 37	° ′ 28 19	h m 7 45	° ′ 27 5	h m 7 59	° ′ 68 50	h m 8 2	° ′ 23 55
	s	″	s	″	s	″	s	″
Jan. 0.5	25.42 +.19	65.4 +0.1	36.26 +.20	47.9 0.0	58.06 +.42	54.2 +2.2	3.68 +.17	58.2 +2.8
10.5	25.59 .14	65.6 0.3	36.43 .15	48.1 +0.2	58.43 .31	56.5 2.5	3.82 .12	61.0 2.7
20.5	25.70 .08	66.0 0.5	36.55 .09	48.4 0.4	58.67 .18	59.1 2.6	3.91 .07	63.6 2.6
30.5	25.75 +.02	66.6 0.6	36.61 +.03	48.8 0.5	58.79 +.05	61.8 2.7	3.95 +.01	66.2 2.4
Feb. 9.4	25.75 −.03	67.2 0.7	36.62 −.02	49.4 0.6	58.78 −.08	64.4 2.6	3.94 −.04	68.4 2.1
19.4	25.69 .08	67.9 0.7	36.57 .07	50.1 0.7	58.64 .19	67.0 2.5	3.88 .08	70.4 1.8
Mar. 1.4	25.59 .12	68.7 0.7	36.48 .11	50.8 0.7	58.39 .30	69.4 2.2	3.77 .12	72.1 1.5
11.3	25.45 .15	69.4 0.7	36.35 .14	51.5 0.7	58.04 .38	71.4 1.9	3.63 .15	73.5 1.2
21.3	25.28 .17	70.0 0.6	36.19 .17	52.1 0.6	57.62 .45	73.2 1.5	3.47 .18	74.4 0.8
31.3	25.10 .18	70.6 0.5	36.01 .18	52.7 0.5	57.15 .49	74.4 1.0	3.28 .19	75.1 0.4
Apr. 10.3	24.91 .18	71.0 0.4	35.83 .18	53.2 0.4	56.65 .50	75.2 +0.5	3.09 .19	75.3 +0.1
20.2	24.73 .17	71.3 0.2	35.65 .17	53.5 0.3	56.14 .49	75.5 0.0	2.89 .19	75.2 −0.3
30.2	24.57 .15	71.5 +0.1	35.49 .15	53.8 0.2	55.66 .46	75.3 −0.4	2.71 .17	74.7 0.6
May 10.2	24.43 .13	71.6 0.0	35.35 .13	53.9 +0.1	55.22 .41	74.6 0.9	2.55 .15	73.9 1.0
20.2	24.32 .09	71.5 −0.1	35.24 .09	53.9 0.0	54.84 .34	73.5 1.3	2.40 .13	72.8 1.3
30.1	24.24 .05	71.3 0.2	35.16 .06	53.8 −0.1	54.53 .27	72.0 1.7	2.29 .10	71.4 1.5
June 9.1	24.21 −.01	71.1 0.3	35.12 −.02	53.6 0.2	54.31 .18	70.2 2.0	2.21 .07	69.7 1.8
19.1	24.22 +.03	70.7 0.4	35.13 +.02	53.4 0.3	54.17 −.09	68.0 2.2	2.16 −.03	67.8 2.0
29.0	24.26 .07	70.3 0.4	35.16 .06	53.0 0.4	54.13 +.01	65.7 2.4	2.14 .00	65.7 2.1
July 9.0	24.35 .10	69.9 0.4	35.24 .09	52.6 0.4	54.19 .11	63.1 2.6	2.16 +.03	63.5 2.2
19.0	24.47 .14	69.4 0.5	35.35 .13	52.2 0.4	54.34 .20	60.5 2.6	2.21 .07	61.2 2.2
29.0	24.62 .17	68.9 0.5	35.50 .16	51.8 0.5	54.59 .29	57.9 2.6	2.30 .10	59.0 2.2
Aug. 7.9	24.81 .20	68.4 0.6	35.68 .19	51.2 0.5	54.92 .37	55.2 2.6	2.42 .14	56.8 2.1
17.9	25.03 .23	67.8 0.6	35.88 .22	50.7 0.6	55.34 .45	52.7 2.5	2.57 .17	54.8 1.9
27.9	25.27 .26	67.1 0.7	36.12 .25	50.0 0.7	55.83 .52	50.3 2.3	2.76 .20	53.0 1.6
Sept. 6.9	25.54 .28	66.5 0.7	36.38 .27	49.4 0.7	56.39 .59	48.0 2.1	2.97 .23	51.6 1.3
16.8	25.83 .30	65.8 0.7	36.66 .29	48.6 0.8	57.01 .65	46.0 1.9	3.21 .25	50.5 0.9
26.8	26.14 .32	65.0 0.8	36.97 .31	47.8 0.8	57.68 .70	44.2 1.6	3.47 .27	49.9 −0.4
Oct. 6.8	26.46 .33	64.2 0.8	37.29 .33	47.0 0.9	58.40 .74	42.7 1.3	3.76 .29	49.7 +0.1
16.7	26.80 .34	63.4 0.8	37.62 .34	46.1 0.9	59.15 .76	41.6 0.9	4.06 .31	50.0 0.5
26.7	27.15 .35	62.6 0.8	37.97 .35	45.3 0.9	59.93 .78	40.9 0.5	4.37 .32	50.9 1.0
Nov. 5.7	27.50 .35	61.9 0.7	38.32 .35	44.4 0.8	60.71 .78	40.6 −0.1	4.69 .32	52.2 1.5
15.7	27.85 .34	61.2 0.6	38.66 .34	43.6 0.7	61.49 .76	40.7 +0.3	5.00 .31	53.9 1.9
25.6	28.18 .32	60.6 0.5	39.00 .33	42.9 0.6	62.23 .72	41.2 0.8	5.31 .30	56.0 2.3
Dec. 5.6	28.49 .30	60.2 0.4	39.32 .30	42.4 0.5	62.93 .67	42.2 1.2	5.60 .27	58.5 2.5
15.6	28.78 .26	59.9 −0.2	39.61 .27	42.0 0.3	63.57 .59	43.7 1.6	5.85 .24	61.1 2.7
25.6	29.02 .22	59.8 0.0	39.86 .23	41.8 −0.1	64.12 .50	45.5 2.0	6.08 .20	63.9 2.8
35.5	29.23 +.18	59.9 +0.2	40.07 +.18	41.8 +0.1	64.56 +.39	47.6 +2.3	6.25 +.15	66.7 +2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ε Hydræ.		ι Ursæ Majoris.		*σ² Ursæ Majoris.		κ Cancri.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 8 39	° ′ 6 53	h m 8 50	° ′ 48 32	h m 8 58	° ′ 67 38	h m 9 0	° ′ 11 10
	s	″	s	″	s	″	s	″
Jan. 0.6	56.77 +.22	26.4 −1.4	22.11 +.33	39.4 +0.8	61.47 +.53	70.0 +1.6	45.53 +.24	69.1 −1.2
10.6	56.97 .18	25.1 1.2	22.41 .27	40.4 1.2	61.95 .43	71.9 2.0	45.75 .20	68.0 1.1
20.5	57.12 .13	23.9 1.0	22.65 .20	41.7 1.4	62.33 .32	74.1 2.3	45.93 .15	67.0 0.8
30.5	57.23 .08	23.0 0.8	22.81 .13	43.2 1.7	62.59 .20	76.5 2.5	46.06 .10	66.3 0.6
Feb. 9.5	57.28 +.03	22.3 0.6	22.90 +.05	45.0 1.8	62.73 +.08	79.2 2.7	46.13 +.05	65.8 0.4
19.4	57.28 −.02	21.8 0.4	22.92 −.02	46.9 1.9	62.74 −.04	81.9 2.7	46.16 .00	65.5 −0.2
Mar. 1.4	57.24 .06	21.5 −0.2	22.87 .08	48.7 1.8	62.64 .16	84.5 2.6	46.14 −.04	65.4 0.0
11.4	57.16 .10	21.4 0.0	22.75 .14	50.5 1.7	62,43 .25	87.0 2.4	46.08 .08	65.6 +0.2
21.4	57,05 .12	21.4 +0.1	22.59 .18	52.2 1.6	62.13 .33	89.2 2.1	45.98 .11	65.8 0.3
31.3	56.91 .14	21.6 0.2	22.38 .22	53.7 1.3	61.76 .40	91.1 1.7	45.86 .13	66.1 0.4
Apr. 10.3	56.76 .15	21.9 0.3	22.16 .23	54.9 1.0	61.34 .44	92.6 1.2	45.72 .14	66.6 0.4
20.3	56.61 .15	22.3 0.4	21.92 .24	55.7 0.7	60.89 .45	93.6 0.8	45.57 .15	67.0 0.5
30.3	56.46 .14	22.7 0.5	21.68 .23	56.3 +0.4	60.43 .45	94.1 +0.3	45.43 .14	67.5 0.5
May 10.2	56.33 .13	23.2 0.5	21.45 .21	56.5 0.0	59.99 .43	94.1 −0.2	45.29 .13	68.1 0.5
20.2	56.21 .11	23.8 0.6	21.25 .19	56.3 −0.3	59.57 .39	93.7 0.7	45.17 .11	68.6 0.5
30.2	56.11 .08	24.4 0.6	21.09 .15	55.9 0.6	59.21 .34	92.8 1.1	45.06 .09	69.1 0.5
June 9.1	56.04 .06	25.1 0.6	20.94 .11	55.1 0.9	58.90 .27	91.4 1.5	44.98 .07	69.6 0.5
19.1	56.00 −.03	25.7 0.7	20.85 .07	54.0 1.2	58.66 .20	89.7 1.9	44.93 .04	70.1 0.5
29.1	55.99 .00	26.4 0.7	20.80 −.03	52.7 1.4	58.50 .12	87.6 2.2	44.90 −.01	70.6 0.4
July 9.1	56.00 +.03	27.0 0.6	20.80 +.02	51.2 1.6	58.42 −.04	85.3 2.4	44.90 +.02	71.0 0.4
19.0	56.05 .06	27.7 0.6	20.84 .07	49.5 1.8	58.42 +.04	82.7 2.6	44.93 .04	71.3 0.3
29.0	56.13 .09	28.2 0.5	20.93 .11	47.6 1.9	58.50 .13	80.0 2.8	44.99 .07	71.6 0.2
Aug. 8.0	56.23 .12	28.7 0.4	21.07 .15	45.7 2.0	58.67 .21	77.2 2.9	45.08 .10	71.7 +0.1
18.0	56.36 .14	29.0 0.3	21.24 .20	43.6 2.0	58.92 .29	74.3 2.9	45.20 .13	71.8 0.0
27.9	56.52 .17	29.2 +0.1	21.46 .24	41.6 2.1	59.25 .36	71.5 2.8	45.34 .16	71.7 −0.2
Sept. 6.9	56.71 .20	29.2 −0.1	21.73 .28	39.5 2.1	59.65 .44	68.7 2.7	45.51 .19	71.4 0.4
16.9	56.92 .22	29.0 0.3	22.03 .32	37.5 2.0	60.12 .51	66.0 2.6	45.71 .21	70.9 0.6
26.8	57.16 .25	28.6 0.5	22.36 .35	35.5 1.9	60.66 .57	63.5 2.4	45.94 .24	70.2 0.8
Oct. 6.8	57.42 .27	27.9 0.8	22.74 .39	33.6 1.8	61.26 .63	61.2 2.1	46.19 .26	69.4 1.0
16.8	57.70 .29	27.0 1.0	24.14 .42	31.9 1.6	61.91 .67	59.2 1.8	46.47 .29	68.3 1.2
26.8	58.00 .31	25.9 1.2	24.57 .44	30.3 1.4	62.61 .71	57.6 1.4	46.77 .31	67.0 1.3
Nov. 5.7	58.32 .32	24.6 1.4	25.02 .45	29.0 1.2	63.33 .73	56.3 1.0	47.08 .32	65.6 1.5
15.7	58.64 .32	23.1 1.5	25.48 .46	28.0 0.9	64.08 .74	55.5 0.6	47.41 .33	64.1 1.6
25.7	58.96 .31	21.5 1.6	25.93 .45	27.3 0.5	64.82 .73	55.2 −0.1	47.74 .33	62.5 1.6
Dec. 5.7	59.27 .30	19.9 1.6	26.38 .44	26.9 −0.2	65.54 .70	55.3 +0.4	48.06 .32	60.9 1.6
15.6	59.56 .28	18.3 1.6	26.81 .41	26.9 +0.2	66.23 .66	55.9 0.9	48.37 .30	59.3 1.5
25.6	59.82 .25	16.7 1.5	27.20 .37	27.3 0.6	66.86 .59	57.1 1.3	48.66 .27	57.9 1.4
35.6	60.06 +.21	15.3 −1.3	27.54 +.31	28.1 +0.9	67.40 +.50	58.6 +1.7	48.91 +.23	56.6 −1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ι Argus.		*1 Draconis.		α Hydræ.		*d Ursæ Majoris.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 9 13	° ′ 58 43	h m 9 18	° ′ 81 53	h m 9 21	° ′ 8 5	h m 9 22	° ′ 70 23
	s	″	s	″	s	″	s	″
Jan. 0.6	39.83 +.30	48.2 +3.4	33.10+1.36	25.6 +1.9	14.99 +.24	57.7 +2.2	62.79 +.63	32.2 +1.5
10.6	40.09 .22	51.8 3.6	34.34 1.12	27.7 2.4	15.22 .20	59.9 2.1	63.38 .53	33.9 1.9
20.6	40.28 .14	55.5 3.7	35.32 .84	30.3 2.7	15.40 .16	62.0 2.0	63.85 .41	36.1 2.3
30.5	40.38 +.06	59.3 3.7	36.01 .54	33.2 3.0	15.53 .11	63.9 1.8	64.20 .28	38.5 2.6
Feb. 9.5	40.40 −.02	63.0 3.6	36.39 +.22	36.2 3.1	15.62 .06	65.6 1.6	64.42 .14	41.2 2.7
19.5	40.34 .10	66.5 3.4	36.45 −.09	39.4 3.1	15.66 +.01	67.1 1.4	64.49 +.01	44.0 2.8
Mar. 1.4	40.20 .17	69.8 3.2	36.21 .39	42.4 3.0	15.65 −.03	68.3 1.1	64.43 −.12	46.8 2.7
11.4	40.00 .23	72.8 2.8	35.67 .67	45.3 2.7	15.59 .07	69.3 0.8	64.25 .24	49.5 2.6
21.4	39.74 .28	75.4 2.4	34.88 .90	47.9 2.4	15.51 .10	70.0 0.6	63.96 .34	51.9 2.3
31.4	39.44 .32	77.6 2.0	33.88 1.09	50.0 1.9	15.39 .12	70.5 0.3	63.58 .42	54.1 1.9
Apr. 10.3	39.10 .35	79.4 1.5	32.71 1.23	51.8 1.5	15.26 .14	70.7 +0.1	63.12 .47	55.8 1.5
20.3	38.74 .37	80.7 1.0	31.43 1.31	52.9 0.9	15.12 .14	70.7 −0.1	62.63 .51	57.1 1.1
30.3	38.37 .37	81.5 +0.5	30.09 1.34	53.6 +0.4	14.97 .14	70.5 0.3	62.11 .52	57.9 +0.5
May 10.3	38.00 .36	81.7 0.0	28.76 1.32	53.7 −0.2	14.84 .13	70.1 0.5	61.59 .51	58.2 0.0
20.2	37.64 .35	81.4 −0.5	27.47 1.25	53.2 0.8	14.70 .12	69.4 0.7	61.10 .47	58.0 −0.5
30.2	37.30 .33	80.7 1.0	26.27 1.14	52.1 1.3	14.59 .11	68.7 0.8	60.64 .43	57.3 0.9
June 9.2	36.98 .30	79.4 1.5	25.21 .99	50.6 1.8	14.49 .08	67.8 1.0	60.24 .36	56.1 1.4
19.1	36.71 .26	77.7 1.9	24.31 .81	48.6 2.2	14.42 .06	66.7 1.1	59.92 .29	54.4 1.8
29.1	36.47 .21	75.6 2.3	23.60 .61	46.2 2.6	14.37 .04	65.5 1.2	59.66 .21	52.5 2.2
July 9.1	36.28 .16	73.1 2.6	23.10 .39	43.4 2.9	14.34 −.01	64.3 1.2	59.50 .12	50.1 2.5
19.1	36.15 .10	70.4 2.8	22.82 −.16	40.4 3.1	14.34 +.01	63.1 1.2	59.42 −.03	47.5 2.7
29.0	36.07 −.04	67.5 3.0	22.77 +.07	37.3 3.2	14.37 .04	61.8 1.2	59.44 +.06	44.7 2.9
Aug. 8.0	36.06 +.02	64.4 3.1	22.96 .31	33.9 3.3	14.43 .07	60.6 1.1	59.55 .16	41.8 3.0
18.0	36.11 .09	61.4 3.0	23.37 .53	30.6 3.3	14.51 .10	59.5 1.0	59.75 .25	38.7 3.1
28.0	36.23 .15	58.4 2.9	24.01 .75	27.2 3.3	14.62 .13	58.6 0.8	60.04 .33	35.6 3.1
Sept. 6.9	36.42 .22	55.6 2.6	24.87 .96	24.0 3.2	14.76 .16	57.8 0.6	60.42 .42	32.6 3.0
16.9	36.67 .22	53.2 2.2	25.93 1.16	20.9 3.0	14.94 .19	57.4 −0.3	60.88 .51	29.6 2.9
26.9	36.99 .34	51.2 1.8	27.18 1.34	18.0 2.7	15.14 .22	57.2 0.0	61.43 .58	26.8 2.7
Oct. 6.8	37.36 .40	49.6 1.3	28.61 1.51	15.4 2.4	15.37 .26	57.4 +0.3	62.05 .65	24.3 2.4
16.8	37.78 .44	48.6 −0.7	30.18 1.64	13.1 2.0	15.63 .27	57.9 0.7	62.74 .72	21.9 2.1
26.8	38.24 .47	48.3 0.0	31.88 1.75	11.3 1.6	15.91 .29	58.8 1.1	63.48 .77	20.0 1.8
Nov. 5.8	38.72 .49	48.6 +0.6	33.67 1.82	9.9 1.1	16.21 .31	60.0 1.4	64.27 .80	18.4 1.4
15.7	39.21 .49	49.5 1.3	35.51 1.85	9.0 −0.6	16.53 .32	61.5 1.7	65.09 .82	17.3 0.9
25.7	39.70 .48	51.1 1.9	37.35 1.83	8.7 0.0	16.85 .32	63.4 1.9	65.92 .82	16.6 −0.4
Dec. 5.7	40.17 .45	53.3 2.4	39.16 1.77	9.0 +0.5	17.17 .31	65.4 2.1	66.74 .80	16.5 +0.1
15.7	40.60 .40	55.9 2.9	40.88 1.66	9.8 1.1	17.48 .29	67.5 2.2	67.53 .76	16.9 0.7
25.6	40.97 .34	59.0 3.3	42.47 1.49	11.1 1.6	17.76 .27	69.8 2.2	68.26 .69	17.8 1.2
35.6	41.29 +.27	62.5 +3.5	43.86+1.27	13.0 +2.1	18.01 +.23	72.0 +2.2	68.92 +.61	19.2 +1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*θ* Ursæ Majoris.		*ε* Leonis.		*μ* Leonis.		*α* Leonis. (*Regulus.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	9 24	52 15	9 38	24 21	9 45	26 36	10 1	12 35
	s	″	s	″	s	″	s	″
Jan. 0.6	13.05 +.38	41.2 +0.7	31.42 +.29	58.5 −0.8	25.20 +.30	44.5 −0.7	29.84 +.29	48.9 −1.4
10.6	13.41 .33	42.1 1.1	31.70 .25	57.9 0.5	25.49 .26	43.9 0.4	30.11 .25	47.5 1.2
20.6	13.71 .26	43.4 1.4	31.93 .20	57.5 −0.2	25.73 .21	43.7 −0.1	30.34 .21	46.4 1.0
30.5	13.93 .18	44.9 1.7	32.11 .15	57.5 +0.1	25.92 .16	43.7 +0.2	30.53 .16	45.6 0.7
Feb. 9.5	14.07 .10	46.8 2.0	32.23 .10	57.7 0.3	26.05 .11	44.1 0.5	30.67 .11	45.0 0.4
19.5	14.14 +.03	48.9 2.1	32.30 +.05	58.2 0.6	26.13 +.05	44.7 0.7	30.75 .06	44.7 −0.2
Mar. 1.4	14.13 −.05	51.0 2.1	32.32 .00	58.9 0.7	26.16 .00	45.5 0.9	30.79 +.02	44.7 0.0
11.4	14.05 .11	53.1 2.0	32.29 −.05	59.7 0.9	26.13 −.04	46.5 1.0	30.79 −.03	44.8 +0.2
21.4	13.91 .17	55.1 1.9	32.22 .09	60.6 0.9	26.07 .08	47.5 1.0	30.74 .06	45.2 0.4
31.4	13.72 .21	56.8 1.7	32.12 .11	61.6 0.9	25.97 .11	48.6 1.0	30.66 .09	45.6 0.5
Apr. 10.3	13.49 .24	58.4 1.4	31.99 .13	62.5 0.9	25.84 .14	49.6 1.0	30.56 .11	46.2 0.6
20.3	13.24 .25	59.6 1.0	31.85 .15	63.4 0.8	25.70 .15	50.6 0.9	30.44 .12	46.8 0.6
30.3	12.99 .25	60.5 0.7	31.70 .15	64.2 0.7	25.55 .15	51.4 0.8	30.31 .13	47.4 0.6
May 10.3	12.73 .25	61.0 +0.3	31.56 .14	64.8 0.6	25.40 .15	52.1 0.6	30.18 .13	48.1 0.6
20.2	12.49 .23	61.1 −0.1	31.42 .13	65.4 0.5	25.26 .14	52.7 0.5	30.06 .12	48.7 0.6
30.2	12.28 .20	60.8 0.5	31.29 .11	65.7 0.3	25.13 .12	53.1 0.3	29.94 .11	49.3 0.5
June 9.2	12.10 .16	60.1 0.8	31.19 .09	66.0 +0.1	25.02 .10	53.3 +0.1	29.84 .09	49.8 0.5
19.1	11.96 .12	59.1 1.2	31.11 .07	66.0 0.0	24.93 .07	53.3 −0.1	29.76 .07	50.3 0.4
29.1	11.85 .08	57.8 1.5	31.06 .04	66.0 −0.2	24.87 .05	53.1 0.2	29.69 .05	50.7 0.3
July 9.1	11.80 −.03	56.2 1.7	31.03 −.01	65.7 0.3	24.83 −.02	52.8 0.4	29.65 .03	51.0 0.2
19.1	11.79 +.01	54.3 1.9	31.03 +.01	65.3 0.5	24.83 +.01	52.3 0.6	29.63 −.01	51.2 +0.1
29.0	11.82 .06	52.3 2.1	31.05 .04	64.8 0.6	24.85 .04	51.6 0.7	29.63 +.02	51.3 0.0
Aug. 8.0	11.91 .11	50.1 2.3	31.11 .07	64.1 0.8	24.90 .06	50.8 0.9	29.66 .04	51.2 −0.1
18.0	12.04 .16	47.7 2.4	31.20 .10	63.3 0.9	24.98 .09	49.8 1.1	29.72 .07	51.1 0.3
28.0	12.22 .20	45.3 2.4	31.31 .13	62.3 1.1	25.09 .13	48.7 1.2	29.80 .10	50.7 0.4
Sept. 6.9	12.45 .26	42.9 2.5	31.46 .16	61.1 1.2	25.23 .16	47.4 1.4	29.92 .13	50.2 0.6
16.9	12.72 .29	40.4 2.4	31.64 .20	59.8 1.4	25.41 .19	45.9 1.5	30.06 .16	49.5 0.8
26.9	13.03 .34	38.0 2.4	31.85 .23	58.4 1.5	25.61 .22	44.4 1.6	30.24 .19	48.5 1.0
Oct. 6.8	13.39 .38	35.7 2.2	32.10 .26	56.9 1.6	25.85 .26	42.7 1.7	30.45 .22	47.4 1.2
16.8	13.79 .42	33.5 2.1	32.37 .29	55.2 1.7	26.13 .29	40.9 1.8	30.69 .25	46.0 1.4
26.8	14.22 .45	31.6 1.8	32.67 .31	53.5 1.7	26.43 .32	39.1 1.8	30.96 .28	44.5 1.6
Nov. 5.8	14.69 .47	29.8 1.6	33.00 .34	51.8 1.7	26.76 .34	37.3 1.8	31.26 .31	42.8 1.7
15.7	15.17 .49	28.4 1.2	33.34 .35	50.1 1.7	27.10 .35	35.6 1.7	31.57 .32	41.1 1.8
25.7	15.66 .49	27.3 0.9	33.70 .35	48.4 1.6	27.46 .36	33.9 1.6	31.91 .34	39.2 1.8
Dec. 5.7	16.15 .48	26.7 −0.5	34.05 .35	46.9 1.4	27.83 .36	32.3 1.4	32.24 .34	37.4 1.8
15.7	16.62 .46	26.4 0.0	34.40 .34	45.6 1.2	28.19 .35	31.0 1.2	32.58 .33	35.6 1.7
25.6	17.06 .42	26.6 +0.4	34.73 .32	44.5 1.0	28.52 .32	30.0 0.9	32.90 .31	33.9 1.6
35.6	17.46 +.37	27.2 +0.8	35.03 +.28	43.6 −0.7	28.83 +.29	29.2 −0.6	33.19 +.28	32.4 −1.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Crateris.		τ Leonis.		*λ Draconis.		υ Leonis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	11 12	14 4	11 21	3 33	11 23	70 2	11 30	0 6
	s	″	s	″	s	″	s	″
Jan. 0.7	53.14 +.32	40.8 +2.4	17.63 +.32	63.1 −2.0	42.72 +.76	20.0 −0.1	20.07 +.32	36.7 +2.1
10.7	53.44 .29	43.2 2.4	17.94 .29	61.1 1.9	43.47 .72	20.2 +0.5	20.38 .30	38.8 2.0
20.6	53.71 .25	45.5 2.3	18.22 .26	59.3 1.7	44.16 .65	21.1 1.1	20.67 .27	40.7 1.8
30.6	53.95 .22	47.8 2.2	18.47 .23	57.8 1.4	44.76 .56	22.5 1.7	20.92 .23	42.4 1.6
Feb. 9.6	54.14 .17	50.0 2.1	18.68 .18	56.5 1.2	45.28 .45	24.4 2.1	21.13 .19	43.9 1.4
19.6	54.29 .13	52.0 1.9	18.84 .14	55.5 0.9	45.67 .33	26.8 2.5	21.30 .15	45.2 1.1
Mar. 1.5	54.40 .08	53.8 1.6	18.95 .09	54.7 0.6	45.95 .21	29.4 2.7	21.42 .10	46.1 0.8
11.5	54.46 +.04	55.3 1.4	19.03 .05	54.3 0.3	46.09 +.08	32.2 2.9	21.50 .06	46.9 0.6
21.5	54.47 .00	56.6 1.1	19.06 +.01	54.0 −0.1	46.11 −.04	35.1 2.9	21.55 +.02	47.3 0.3
31.5	54.46 −.03	57.6 0.9	19.06 −.02	54.0 +0.1	46.01 .15	38.0 2.8	21.55 −.01	47.5 +0.1
Apr. 10.4	54.41 .06	58.3 0.6	19.02 .05	54.2 0.3	45.81 .25	40.8 2.6	21.52 .04	47.6 −0.1
20.4	54.34 .08	58.9 0.4	18.96 .07	54.6 0.4	45.52 .33	43.2 2.3	21.47 .06	47.4 0.2
30.4	54.25 .10	59.2 +0.2	18.88 .09	55.0 0.5	45.15 .40	45.4 1.9	21.40 .08	47.1 0.4
May 10.3	54.15 .11	59.2 0.0	18.79 .09	55.6 0.6	44.72 .44	47.1 1.5	21.32 .09	46.7 0.5
20.3	54.04 .11	59.1 −0.2	18.69 .10	56.2 0.6	44.26 .47	48.3 1.0	21.22 .10	46.2 0.5
30.3	53.92 .11	58.7 0.4	18.59 .10	56.8 0.6	43.78 .48	49.0 +0.5	21.12 .10	45.6 0.6
June 9.3	53.81 .11	58.2 0.6	18.48 .10	57.5 0.6	43.29 .46	49.2 −0.1	21.02 .10	45.0 0.6
19.2	53.70 .11	57.5 0.8	18.39 .10	58.1 0.6	42.82 .46	48.9 0.6	20.91 .10	44.3 0.7
29.2	53.60 .10	56.7 0.9	18.29 .09	58.7 0.6	42.37 .43	48.1 1.1	20.82 .09	43.7 0.7
July 9.2	53.50 .09	55.7 1.0	18.21 .08	59.3 0.5	41.96 .38	46.7 1.6	20.73 .08	43.0 0.6
19.2	53.42 .07	54.7 1.1	18.13 .07	59.8 0.5	41.60 .33	44.9 2.0	20.65 .07	42.4 0.6
29.1	53.36 .06	53.6 1.1	18.07 .05	60.3 0.4	41.30 .27	42.7 2.4	20.58 .06	41.8 0.5
Aug. 8.1	53.31 .04	52.4 1.1	18.03 .03	60.6 0.3	41.07 .20	40.1 2.8	20.54 .04	41.3 0.4
18.1	53.29 −.01	51.3 1.1	18.01 −.01	60.9 +0.1	40.90 .12	37.2 3.0	20.51 −.02	40.9 0.3
28.0	53.29 +.02	50.2 1.0	18.01 +.02	60.9 0.0	40.82 −.04	34.0 3.3	20.50 +.01	40.6 −0.2
Sept. 7.0	53.32 .05	49.3 0.8	18.04 .05	60.8 −0.2	40.82 +.05	30.7 3.5	20.52 .04	40.5 0.0
17.0	53.38 .08	48.6 0.6	18.10 .08	60.5 0.4	40.91 .14	27.1 3.6	20.57 .07	40.6 +0.2
27.0	53.48 .12	48.1 0.4	18.20 .11	59.9 0.7	41.10 .23	23.5 3.6	20.65 .10	41.0 0.5
Oct. 6.9	53.62 .16	47.8 −0.1	18.33 .15	59.1 0.9	41.38 .33	19.9 3.6	20.78 .14	41.6 0.7
16.9	53.80 .20	48.0 +0.3	18.50 .19	58.1 1.2	41.75 .42	16.4 3.4	20.94 .18	42.4 1.0
26.9	54.02 .24	48.4 0.6	18.71 .23	56.7 1.4	42.22 .51	13.1 3.2	21.14 .22	43.6 1.3
Nov. 5.8	54.28 .27	49.3 1.0	18.96 .26	55.2 1.7	42.77 .60	10.0 2.9	21.38 .26	45.0 1.5
15.8	54.57 .30	50.4 1.4	19.23 .29	53.4 1.9	43.41 .67	7.2 2.6	21.65 .29	46.7 1.8
25.8	54.88 .32	52.0 1.7	19.54 .32	51.4 2.0	44.11 .73	4.8 2.1	21.95 .31	48.5 1.9
Dec. 5.8	55.21 .33	53.8 1.9	19.86 .33	49.3 2.1	44.87 .77	2.9 1.6	22.28 .33	50.6 2.1
15.7	55.55 .34	55.9 2.2	20.20 .34	47.2 2.1	45.65 .79	1.5 1.1	22.61 .33	52.7 2.2
25.7	55.88 .33	58.1 2.3	20.54 .33	45.1 2.1	46.44 .78	0.8 −0.5	22.95 .33	54.9 2.1
35.7	56.21 +.31	60.5 +2.4	20.86 +.31	43.0 −2.0	47.22 +.75	0.6 +0.1	23.27 +.32	57.0 +2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Leonis.		γ Ursæ Majoris.		o Virginis.		*4 Draconis (H.)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 11 42	° ′ 15 17	h m 11 47	° ′ 54 24	h m 11 58	° ′ 9 26	h m 12 6	° ′ 78 19
	s	″	s	″	s	″	s	″
Jan. 0.7	28.00 +.33	35.9 −1.8	1.39 +.50	32.5 −0.8	37.49 +.33	60.9 −2.0	7.10+1.24	44.4 −0.4
10.7	28.32 .31	34.2 1.5	1.88 .47	31.9 −0.3	37.81 .31	59.0 1.8	8.32 1.20	44.3 +0.2
20.7	28.63 .29	32.8 1.3	2.34 .44	31.9 +0.3	38.12 .29	57.3 1.5	9.49 1.13	44.9 0.8
30.6	28.90 .25	31.7 0.9	2.75 .39	32.5 0.8	38.39 .26	56.0 1.2	10.57 1.02	46.0 1.4
Feb. 9.6	29.13 .21	31.0 0.6	3.11 .32	33.6 1.3	38.63 .22	54.9 0.9	11.52 .87	47.8 2.0
19.6	29.32 .16	30.6 −0.2	3.40 .25	35.2 1.8	38.83 .18	54.1 0.6	12.30 .70	50.0 2.4
Mar. 1.6	29.46 .12	30.5 +0.1	3.62 .18	37.2 2.1	38.99 .13	53.6 −0.3	12.90 .50	52.6 2.7
11.5	29.56 .08	30.7 0.3	3.76 .11	39.5 2.4	39.10 .09	53.5 0.0	13.30 .29	55.5 3.0
21.5	29.61 +.03	31.2 0.6	3.83 +.04	41.9 2.5	39.17 .05	53.6 +0.2	13.49 +.09	58.6 3.1
31.5	29.63 .00	31.9 0.8	3.83 −.03	44.4 2.5	39.20 +.01	53.9 0.4	13.48 −.11	61.6 3.0
Apr. 10.4	29.61 −.03	32.7 0.9	3.77 .09	47.0 2.4	39.20 −.02	54.5 0.6	13.27 .30	64.6 2.9
20.4	29.56 .06	33.7 1.0	3.66 .14	49.3 2.3	39.17 .04	55.2 0.7	12.88 .46	67.4 2.6
30.4	29.49 .08	34.6 1.0	3.50 .18	51.5 2.0	39.12 .06	55.9 0.8	12.34 .61	69.9 2.3
May 10.4	29.41 .09	35.6 1.0	3.30 .21	53.4 1.7	39.05 .08	56.7 0.8	11.68 .72	72.0 1.9
20.3	29.31 .10	36.5 0.9	3.08 .23	55.0 1.3	38.96 .09	57.6 0.8	10.91 .81	73.6 1.4
30.3	29.21 .11	37.4 0.8	2.85 .24	56.1 0.9	38.87 .10	58.4 0.8	10.07 .87	74.8 0.9
June 9.3	29.10 .11	38.2 0.7	2.61 .24	56.8 +0.5	38.77 .10	59.1 0.7	9.18 .90	75.3 +0.3
19.3	28.99 .10	38.8 0.6	2.37 .24	57.1 0.0	38.67 .10	59.8 0.6	8.28 .90	75.4 −0.2
29.2	28.89 .10	39.3 0.4	2.13 .23	56.9 −0.4	38.57 .10	60.4 0.5	7.39 .88	74.9 0.8
July 9.2	28.79 .09	39.6 0.3	1.92 .21	56.2 0.9	38.47 .09	60.9 0.4	6.54 .83	73.8 1.3
19.2	28.70 .08	39.8 +0.1	1.72 .18	55.1 1.3	38.38 .09	61.3 0.3	5.74 .76	72.2 1.8
29.1	28.63 .07	39.8 −0.1	1.55 .16	53.6 1.7	38.30 .08	61.5 +0.1	5.02 .68	70.2 2.3
Aug. 8.1	28.57 .05	39.6 0.3	1.41 .12	51.8 2.0	38.23 .06	61.6 0.0	4.39 .58	67.7 2.7
18.1	28.53 −.03	39.2 0.5	1.30 .08	49.5 2.4	38.18 .04	61.5 −0.2	3.87 .46	64.8 3.0
28.1	28.51 .00	38.6 0.7	1.24 −.04	47.0 2.7	38.14 −.02	61.2 0.4	3.47 .33	61.6 3.3
Sept. 7.0	28.52 +.02	37.8 0.9	1.22 +.01	44.2 2.9	38.14 +.01	60.7 0.6	3.21 .19	58.1 3.6
17.0	28.56 .06	36.8 1.2	1.25 .06	41.2 3.1	38.16 .04	60.0 0.8	3.09 −.04	54.5 3.7
27.0	28.64 .09	35.5 1.4	1.34 .11	38.0 3.2	38.22 .08	59.1 1.0	3.13 +.12	50.7 3.8
Oct. 7.0	28.75 .13	34.0 1.6	1.48 .17	34.7 3.3	38.31 .12	57.9 1.3	3.33 .28	46.9 3.8
16.9	28.90 .17	32.3 1.8	1.68 .24	31.3 3.3	38.45 .16	56.5 1.5	3.70 .45	43.1 3.7
26.9	29.10 .21	30.4 2.0	1.95 .30	28.0 3.3	38.63 .20	54.9 1.8	4.23 .61	39.4 3.6
Nov. 5.9	29.33 .25	28.3 2.1	2.28 .35	24.8 3.1	38.84 .24	53.0 1.9	4.92 .77	35.9 3.3
15.8	29.60 .29	26.1 2.2	2.66 .41	21.8 2.9	39.10 .27	51.0 2.1	5.76 .91	32.7 3.0
25.8	29.90 .31	23.8 2.3	3.09 .45	19.1 2.6	39.39 .30	48.8 2.2	6.74 1.03	29.9 2.6
Dec. 5.8	30.23 .33	21.5 2.2	3.55 .48	16.7 2.2	39.70 .32	46.6 2.2	7.83 1.14	27.6 2.0
15.8	30.57 .34	19.3 2.1	4.05 .50	14.7 1.7	40.04 .34	44.4 2.2	9.01 1.20	25.8 1.5
25.7	30.91 .34	17.2 2.0	4.56 .50	13.2 1.2	40.38 .34	42.2 2.1	10.24 1.24	24.7 0.9
35.7	31.25 +.33	15.4 −1.8	5.06 +.49	12.3 −0.6	40.71 +.33	40.2 −1.9	11.48+1.24	24.1 −0.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*β Chamæleontis.		η Virginis.		α¹ Crucis.		β Corvi.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 12 10	° ′ 78 35	h m 12 13	° ′ 0 2	h m 12 19	° ′ 62 22	h m 12 27	° ′ 22 40
	s	″	s	″	s	″	s	″
Jan. 0.7	49.68+1.18	19.8 +1.5	17.56 +.33	66.9 −2.2	25.39 +.58	34.1 +1.7	35.98 +.35	44.1 +2.1
10.7	50.83 1.11	21.6 2.1	17.88 .31	64.8 2.0	25.96 .54	36.1 2.2	36.32 .33	46.3 2.3
20.7	51.89 1.00	24.0 2.6	18.18 .29	62.8 1.9	26.48 .50	38.5 2.6	36.65 .31	48.6 2.4
30.6	52.84 .88	26.7 3.0	18.46 .26	61.1 1.6	26.95 .44	41.4 3.0	36.94 .28	51.0 2.4
Feb. 9.6	53.65 .73	29.9 3.3	18.71 .23	59.5 1.4	27.36 .38	44.5 3.2	37.21 .24	53.4 2.3
19.6	54.31 .57	33.4 3.6	18.91 .19	58.2 1.1	27.71 .31	47.9 3.4	37.43 .20	55.7 2.2
Mar. 1.6	54.80 .41	37.1 3.7	19.08 .14	57.2 0.9	27.98 .23	51.4 3.5	37.62 .16	57.9 2.1
11.5	55.12 .24	40.9 3.8	19.20 .10	56.5 0.6	28.17 .16	54.9 3.5	37.76 .12	59.9 1.9
21.5	55.27 +.07	44.8 3.8	19.29 .07	56.0 0.3	28.29 .08	58.4 3.5	37.86 .08	61.7 1.7
31.5	55.26 −.09	48.5 3.7	19.34 +.03	55.8 −0.1	28.34 +.01	61.8 3.3	37.92 .04	63.3 1.5
Apr. 10.4	55.09 .25	52.2 3.5	19.35 .00	55.8 +0.1	28.32 −.05	65.1 3.1	37.95 +.01	64.7 1.2
20.4	54.77 .39	55.6 3.3	19.34 −.02	56.0 0.2	28.24 .11	68.1 2.9	37.95 −.01	65.8 1.0
30.4	54.30 .53	58.8 3.0	19.30 .05	56.3 0.4	28.10 .16	70.8 2.6	37.92 .04	66.7 0.8
May 10.4	53.71 .65	61.6 2.6	19.24 .06	56.7 0.5	27.91 .21	73.2 2.2	37.87 .06	67.4 0.5
20.3	53.01 .75	64.0 2.2	19.17 .08	57.2 0.6	27.67 .25	75.2 1.8	37.79 .08	67.8 0.3
30.3	52.20 .84	66.0 1.7	19.09 .09	57.8 0.6	27.40 .29	76.8 1.3	37.71 .09	68.0 +0.1
June 9.3	51.33 .88	67.5 1.2	19.00 .09	58.5 0.6	27.09 .32	77.9 0.9	37.61 .10	67.9 −0.1
19.3	50.40 .95	68.5 0.7	18.90 .10	59.1 0.6	26.76 .34	78.6 +0.4	37.50 .11	67.7 0.3
29.2	49.43 .97	68.9 +0.1	18.80 .10	59.7 0.6	26.42 .35	78.7 −0.1	37.38 .12	67.2 0.5
July 9.2	48.46 .96	68.7 −0.4	18.70 .10	60.3 0.6	26.07 .35	78.4 0.6	37.26 .12	66.6 0.7
19.2	47.51 .93	68.1 0.9	18.60 .09	60.9 0.5	25.72 .34	77.6 1.0	37.14 .12	65.8 0.9
29.1	46.60 .86	66.9 1.5	18.52 .08	61.4 0.5	25.39 .32	76.4 1.5	37.02 .11	64.8 1.0
Aug. 8.1	45.78 .77	65.1 1.9	18.44 .07	61.9 0.4	25.08 .29	74.7 1.9	36.91 .10	63.7 1.1
18.1	45.07 .65	63.0 2.3	18.37 .05	62.2 0.3	24.81 .24	72.6 2.2	36.82 .08	62.5 1.2
28.1	44.49 .49	60.5 2.6	18.33 .03	62.4 +0.1	24.59 .18	70.3 2.5	36.75 .06	61.3 1.2
Sept. 7.0	44.07 .32	57.7 2.9	18.31 −.01	62.5 −0.1	24.44 .12	67.7 2.6	36.70 −.03	60.1 1.1
17.0	43.84 −.13	54.8 3.0	18.31 +.02	62.3 0.3	24.36 −.04	65.0 2.7	36.69 .00	59.0 1.0
27.0	43.80 +.07	51.7 3.0	18.36 .06	61.9 0.5	24.36 +.05	62.3 2.6	36.71 +.05	58.1 0.9
Oct. 7.0	43.98 .28	48.8 2.9	18.44 .10	61.3 0.7	24.46 .14	59.7 2.5	36.78 .09	57.3 0.6
16.9	44.35 .48	46.0 2.7	18.56 .14	60.5 1.0	24.64 .23	57.3 2.2	36.89 .14	56.8 −0.3
26.9	44.93 .67	43.4 2.3	18.72 .18	59.3 1.3	24.91 .32	55.3 1.9	37.05 .18	56.7 0.0
Nov. 5.9	45.70 .85	41.3 1.9	18.93 .23	57.9 1.5	25.27 .40	53.6 1.4	37.26 .23	56.8 +0.3
15.8	46.63 .99	39.7 1.3	19.17 .26	56.3 1.8	25.70 .47	52.4 0.9	37.51 .27	57.4 0.7
25.8	47.69 1.10	38.6 0.8	19.45 .29	54.4 2.0	26.20 .52	51.7 −0.4	37.80 .31	58.3 1.1
Dec. 5.8	48.84 1.18	38.2 −0.1	19.76 .32	52.3 2.1	26.74 .56	51.7 +0.2	38.12 .33	59.6 1.5
15.8	50.04 1.21	38.4 +0.5	20.08 .33	50.2 2.2	27.32 .58	52.2 0.8	38.46 .35	61.2 1.8
25.7	51.26 1.20	39.2 1.1	20.42 .34	48.0 2.2	27.91 .58	53.3 1.4	38.82 .35	63.1 2.0
35.7	52.45+1.16	40.7 +1.7	20.75 +.33	45.9 −2.1	28.49 +.57	55.0 +1.9	39.17 +.35	65.2 +2.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*κ Draconis.		*32 Camelop. (foll.)		12 Can. Venaticorum.		θ Virginis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 12 27	° ′ 70 29	h m 12 48	° ′ 84 6	h m 12 49	° ′ 39 0	h m 13 3	° ′ 4 50
	s	″	s	″	s	″	s	″
Jan. 0.8	56.85 +.79	44.2 −1.0	10.43 +2.28	36.0 −0.9	58.29 +.40	49.3 −1.9	15.23 +.33	50.9 +2.1
10.7	57.63 .77	43.6 −0.3	12.73 2.30	35.4 −0.2	58.69 .39	47.6 1.4	15.56 .33	53.0 2.1
20.7	58.39 .74	43.6 +0.3	15.01 2.23	35.5 +0.4	59.07 .37	46.5 0.9	15.88 .31	55.1 2.0
30.7	59.10 .67	44.3 1.0	17.18 2.09	36.2 1.0	59.44 .35	45.9 −0.3	16.19 .29	57.0 1.8
Feb. 9.6	59.74 .59	45.5 1.5	19.17 1.88	37.6 1.7	59.77 .31	45.8 +0.2	16.46 .26	58.7 1.6
19.6	60.29 .49	47.3 2.0	20.91 1.60	39.5 2.1	60.06 .27	46.3 0.7	16.71 .23	60.3 1.4
Mar. 1.6	60.73 .38	49.6 2.5	22.34 1.26	41.9 2.6	60.30 .22	47.2 1.1	16.92 .19	61.5 1.1
11.6	61.05 .26	52.2 2.7	23.42 .88	44.6 2.9	60.49 .17	48.5 1.5	17.09 .15	62.6 0.9
21.5	61.24 .14	55.1 2.9	24.11 .49	47.6 3.1	60.63 .12	50.2 1.8	17.22 .12	63.3 0.6
31.5	61.32 +.01	58.1 3.0	24.40 +.09	50.7 3.1	60.72 .07	52.1 2.0	17.32 .08	63.8 0.4
Apr. 10.5	61.27 −.10	61.1 2.9	24.29 −.30	53.8 3.0	60.77 +.02	54.2 2.1	17.39 .05	64.1 +0.2
20.5	61.12 .20	63.9 2.7	23.81 .67	56.8 2.9	60.77 −.02	56.4 2.2	17.42 +.02	64.2 0.0
30.4	60.87 .29	66.6 2.5	22.97 .99	59.6 2.6	60.73 .05	58.6 2.1	17.43 .00	64.1 −0.2
May 10.4	60.54 .37	68.9 2.1	21.83 1.28	62.0 2.2	60.66 .09	60.6 1.9	17.42 −.03	63.9 0.3
20.4	60.14 .42	70.8 1.7	20.42 1.52	64.0 1.8	60.56 .11	62.5 1.7	17.38 .05	63.6 0.4
30.3	59.69 .47	72.3 1.2	18.80 1.70	65.5 1.3	60.44 .13	64.1 1.5	17.32 .06	63.1 0.5
June 9.3	59.20 .49	73.3 0.7	17.03 1.83	66.5 0.7	60.30 .15	65.4 1.2	17.25 .08	62.6 0.5
19.3	58.70 .51	73.8 +0.2	15.16 1.91	67.0 +0.2	60.15 .15	66.5 0.8	17.17 .09	62.1 0.6
29.3	58.19 .50	73.7 −0.3	13.23 1.93	66.9 −0.4	59.99 .16	67.1 0.5	17.08 .10	61.5 0.6
July 9.2	57.69 .49	73.1 0.9	11.32 1.89	66.2 0.9	59.83 .16	67.4 +0.1	16.97 .11	60.9 0.6
19.2	57.21 .46	72.0 1.3	9.46 1.82	65.0 1.4	59.66 .16	67.3 −0.3	16.87 .11	60.3 0.6
29.2	56.77 .42	70.4 1.8	7.70 1.70	63.3 2.0	59.51 .15	66.8 0.7	16.76 .11	59.8 0.6
Aug. 8.2	56.37 .37	68.3 2.3	6.08 1.54	61.1 2.4	59.36 .14	65.9 1.0	16.65 .10	59.2 0.5
18.1	56.03 .31	65.8 2.7	4.63 1.35	58.5 2.8	59.24 .12	64.7 1.4	16.55 .09	58.8 0.4
28.1	55.75 .24	62.9 3.0	3.39 1.12	55.5 3.2	59.13 .10	63.1 1.7	16.47 .07	58.4 0.3
Sept. 7.1	55.55 .16	59.7 3.3	2.40 .86	52.2 3.4	59.04 .07	61.2 2.1	16.40 .05	58.1 −0.2
17.0	55.43 −.07	56.3 3.5	1.67 .59	48.6 3.7	58.99 −.03	59.0 2.4	16.36 −.02	58.1 0.0
27.0	55.40 +.02	52.7 3.7	1.24 −.28	44.8 3.8	58.98 +.01	56.4 2.6	16.35 +.01	58.2 +0.2
Oct. 7.0	55.47 .12	48.9 3.8	1.11 +.04	41.0 3.9	59.02 .06	53.7 2.8	16.38 .05	58.5 0.4
17.0	55.65 .23	45.1 3.8	1.31 .37	37.0 3.9	59.10 .11	50.8 3.0	16.45 .09	59.0 0.7
26.9	55.93 .33	41.3 3.7	1.85 .70	33.2 3.8	59.24 .16	47.7 3.1	16.57 .14	59.8 0.9
Nov. 5.9	56.31 .44	37.7 3.5	2.71 1.03	29.5 3.6	59.42 .21	44.5 3.2	16.73 .19	60.9 1.2
15.9	56.80 .53	34.3 3.3	3.91 1.35	26.0 3.3	59.66 .26	41.3 3.1	16.94 .23	62.3 1.5
25.9	57.38 .62	31.2 2.9	5.40 1.63	22.9 2.9	59.95 .31	38.3 3.0	17.19 .27	63.9 1.7
Dec. 5.8	58.05 .69	28.5 2.5	7.16 1.89	20.2 2.5	60.28 .35	35.3 2.8	17.47 .30	65.7 1.9
15.8	58.77 .75	26.3 1.9	9.17 2.10	18.0 1.9	60.65 .38	32.7 2.5	17.78 .32	67.7 2.0
25.8	59.54 .78	24.6 1.4	11.34 2.23	16.3 1.3	61.03 .39	30.3 2.1	18.11 .33	69.8 2.1
35.7	60.33 +.78	23.6 −0.7	13.60 +2.29	15.3 −0.7	61.43 +.40	28.4 −1.7	18.45 +.33	71.9 +2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Virginis. (*Spica.*)		ζ Virginis.		η Ursæ Majoris.		η Bootis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	13h 18m	10° 29′	13h 28m	0° 3′	13h 42m	49° 56′	13h 48m	19° 2′
	s	″	s	″	s	″	s	″
Jan. 0.8	22.74 +.34	3.9 +2.1	5.99 +.33	58.7 −2.2	25.86 +.43	79.2 −2.2	31.18 +.33	43.3 −2.3
10.8	23.08 .33	6.0 2.1	6.32 .33	56.5 2.1	26.29 .44	77.2 1.7	31.51 .34	41.0 2.1
20.7	23.41 .32	8.1 2.0	6.64 .32	54.5 1.9	26.74 .44	75.8 1.1	31.85 .33	39.1 1.7
30.7	23.72 .29	10.0 1.9	6.95 .30	52.7 1.7	27.18 .43	74.9 −0.5	32.18 .32	37.6 1.3
Feb. 9.7	24.00 .27	11.9 1.8	7.24 .27	51.1 1.5	27.59 .40	74.7 +0.1	32.49 .30	36.5 0.9
19.7	24.26 .24	13.7 1.6	7.50 .24	49.8 1.2	27.97 .36	75.1 0.7	32.77 .27	35.7 0.5
Mar. 1.6	24.48 .20	15.2 1.4	7.73 .21	48.8 0.9	28.31 .31	76.1 1.2	33.03 .24	35.5 −0.1
11.6	24.67 .17	16.5 1.2	7.92 .18	48.0 0.6	28.59 .26	77.6 1.7	33.24 .20	35.6 +0.3
21.6	24.82 .13	17.6 1.0	8.08 .14	47.5 0.3	28.82 .20	79.5 2.1	33.43 .16	36.1 0.7
31.5	24.93 .10	18.4 0.7	8.20 .11	47.3 −0.1	28.99 .14	81.8 2.4	33.57 .13	36.9 1.0
Apr. 10.5	25.02 .07	19.0 0.5	8.29 .07	47.3 +0.1	29.11 .09	84.3 2.6	33.68 .09	38.1 1.2
20.5	25.07 .04	19.4 0.3	8.35 .04	47.6 0.3	29.16 +.03	86.9 2.6	33.75 .06	39.4 1.4
30.5	25.09 +.01	19.7 +0.2	8.38 +.02	47.9 0.4	29.17 −.02	89.6 2.6	33.80 +.03	40.8 1.5
May 10.4	25.09 −.01	19.7 0.0	8.39 −.01	48.5 0.6	29.13 .07	92.2 2.5	33.81 .00	42.3 1.5
20.4	25.07 .03	19.7 −0.1	8.37 .03	49.1 0.6	29.04 .11	94.6 2.3	33.80 −.03	43.8 1.5
30.4	25.02 .05	19.5 0.2	8.33 .05	49.7 0.7	28.91 .14	96.8 2.0	33.76 .05	45.3 1.4
June 9.4	24.96 .07	19.2 0.3	8.27 .07	50.4 0.7	28.75 .17	98.7 1.7	33.70 .07	46.6 1.3
19.3	24.88 .09	18.8 0.4	8.19 .08	51.1 0.7	28.57 .20	100.2 1.3	33.61 .09	47.8 1.1
29.3	24.79 .10	18.3 0.5	8.11 .09	51.7 0.6	28.36 .22	101.3 0.9	33.52 .10	48.8 0.9
July 9.3	24.68 .11	17.8 0.6	8.00 .10	52.4 0.6	28.14 .23	101.9 +0.4	33.40 .12	49.6 0.7
19.2	24.57 .11	17.2 0.6	7.90 .11	52.9 0.5	27.91 .23	102.1 0.0	33.28 .13	50.2 0.4
29.2	24.45 .12	16.6 0.6	7.78 .12	53.4 0.4	27.67 .24	101.8 −0.5	33.15 .13	50.5 +0.2
Aug. 8.2	24.34 .11	16.0 0.6	7.66 .11	53.8 0.3	27.43 .23	101.1 1.0	33.01 .13	50.5 −0.1
18.2	24.23 .10	15.4 0.6	7.55 .11	54.1 0.2	27.21 .22	99.9 1.4	32.88 .13	50.3 0.4
28.1	24.13 .09	14.8 0.5	7.45 .09	54.3 +0.1	27.00 .19	98.3 1.7	32.76 .11	49.7 0.7
Sept. 7.1	24.05 .07	14.3 0.4	7.37 .07	54.3 −0.1	26.82 .17	96.2 2.2	32.65 .10	48.9 0.9
17.1	24.00 −.04	13.9 0.3	7.31 .05	54.1 0.3	26.67 .13	93.8 2.6	32.57 .07	47.8 1.2
27.1	23.97 .00	13.7 −0.1	7.28 −.01	53.7 0.5	26.56 .08	91.1 2.9	32.51 −.04	46.5 1.5
Oct. 7.0	23.99 +.04	13.7 +0.1	7.28 +.03	53.1 0.7	26.50 −.03	88.0 3.2	32.48 .00	44.8 1.8
17.0	24.05 .08	13.9 0.3	7.33 .07	52.3 1.0	26.50 +.03	84.7 3.4	32.50 +.04	42.9 2.0
27.0	24.15 .13	14.3 0.6	7.42 .11	51.2 1.2	26.55 .09	81.2 3.5	32.56 .09	40.7 2.3
Nov. 5.9	24.30 .18	15.1 0.9	7.55 .16	49.9 1.5	26.68 .15	77.6 3.6	32.68 .14	38.4 2.5
15.9	24.50 .22	16.1 1.1	7.73 .20	48.3 1.7	26.86 .22	74.0 3.6	32.84 .18	35.8 2.6
25.9	24.74 .26	17.4 1.4	7.96 .25	46.5 1.9	27.11 .28	70.5 3.5	33.05 .23	33.1 2.7
Dec. 5.9	25.02 .29	18.9 1.7	8.23 .28	44.5 2.0	27.43 .34	67.1 3.2	33.30 .27	30.4 2.7
15.8	25.33 .32	20.7 1.9	8.52 .31	42.4 2.1	27.79 .38	64.0 2.9	33.58 .30	27.7 2.6
25.8	25.65 .33	22.7 2.0	8.84 .32	40.3 2.2	28.19 .42	61.2 2.5	33.90 .32	25.1 2.5
35.8	25.99 +.34	24.7 +2.1	9.17 +.33	38.1 −2.2	28.62 +.44	58.9 −2.1	34.23 +.33	22.7 −2.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Centauri.		*α Draconis.		α Bootis. (*Arcturus.*)		θ Bootis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 13 54	° ′ 59 44	h m 14 0	° ′ 64 59	h m 14 9	° ′ 19 50	h m 14 20	° ′ 52 26
	s	″	s	″	s	″	s	″
Jan. 0.8	42.38 +.56	34.6 +0.6	51.98 +.57	21.8 −2.3	45.16 +.32	78.5 −2.5	46.49 +.41	43.8 −2.6
10.8	42.94 .56	35.4 1.1	52.57 .60	19.8 1.7	45.49 .33	76.1 2.2	46.92 .44	41.4 2.1
20.8	43.50 .55	36.8 1.5	53.19 .62	18.4 1.0	45.82 .33	74.0 1.9	47.38 .45	39.6 1.5
30.7	44.05 .53	38.5 1.9	53.81 .61	17.7 −0.4	46.15 .32	72.4 1.5	47.83 .45	38.4 0.9
Feb. 9.7	44.56 .49	40.7 2.3	54.40 .58	17.7 +0.3	46.46 .30	71.1 1.0	48.27 .43	37.8 −0.3
19.7	45.04 .45	43.1 2.6	54.96 .53	18.3 0.9	46.76 .28	70.3 0.6	48.69 .40	37.9 +0.4
Mar. 1.7	45.46 .40	45.8 2.8	55.46 .47	19.6 1.5	47.02 .25	69.9 −0.2	49.07 .36	38.6 1.0
11.6	45.84 .35	48.7 2.9	55.89 .39	21.3 2.0	47.25 .22	70.0 +0.3	49.41 .31	39.8 1.5
21.6	46.15 .29	51.7 3.0	56.24 .31	23.6 2.4	47.45 .18	70.4 0.6	49.70 .26	41.6 2.0
31.6	46.40 .22	54.8 3.1	56.51 .22	26.2 2.7	47.62 .15	71.2 1.0	49.93 .20	43.7 2.3
Apr. 10.5	46.60 .16	57.8 3.0	56.68 .13	29.1 2.9	47.74 .11	72.4 1.2	50.10 .14	46.2 2.6
20.5	46.73 .10	60.8 2.9	56.77 +.04	32.1 3.0	47.84 .08	73.7 1.4	50.22 .08	48.9 2.7
30.5	46.81 +.04	63.7 2.8	56.77 −.04	35.1 3.0	47.90 .05	75.2 1.5	50.27 +.03	51.7 2.8
May 10.5	46.82 −.01	66.4 2.6	56.69 .12	38.0 2.8	47.93 +.02	76.7 1.6	50.27 −.02	54.5 2.7
20.4	46.78 .07	68.9 2.3	56.54 .19	40.7 2.6	47.93 −.01	78.3 1.5	50.22 .07	57.2 2.6
30.4	46.69 .12	71.1 2.0	56.31 .25	43.1 2.3	47.90 .04	79.8 1.5	50.12 .12	59.7 2.3
June 9.4	46.54 .17	73.0 1.7	56.03 .30	45.2 1.9	47.85 .06	81.2 1.3	49.98 .16	61.9 2.0
19.4	46.35 .21	74.5 1.3	55.71 .35	46.9 1.4	47.78 .08	82.5 1.2	49.80 .19	63.8 1.7
29.3	46.11 .25	75.7 0.9	55.34 .38	48.0 0.9	47.69 .10	83.6 1.0	49.60 .22	65.2 1.3
July 9.3	45.84 .28	76.4 +0.5	54.94 .40	48.7 +0.4	47.57 .12	84.4 0.7	49.36 .25	66.3 0.8
19.3	45.54 .31	76.7 0.0	54.53 .42	48.9 −0.1	47.45 .13	85.0 0.5	49.10 .26	66.9 +0.3
29.2	45.22 .32	76.5 −0.4	54.11 .42	48.5 0.6	47.31 .14	85.4 +0.2	48.84 .27	67.0 −0.1
Aug. 8.2	44.90 .32	75.9 0.8	53.69 .41	47.7 1.1	47.17 .14	85.5 −0.1	48.56 .27	66.6 0.6
18.2	44.58 .31	74.9 1.2	53.28 .39	46.3 1.6	47.02 .14	85.3 0.3	48.29 .27	65.7 1.1
28.2	44.28 .28	73.4 1.6	52.90 .36	44.5 2.1	46.88 .13	84.8 0.6	48.02 .25	64.4 1.6
Sept. 7.1	44.02 .24	71.7 1.9	52.55 .32	42.2 2.5	46.76 .12	84.0 1.0	47.78 .23	62.6 2.0
17.1	43.80 .19	69.6 2.2	52.25 .27	39.4 2.9	46.65 .09	82.9 1.2	47.56 .20	60.4 2.4
27.1	43.64 .12	67.4 2.3	52.01 .21	36.4 3.2	46.57 .06	81.5 1.5	47.39 .16	57.8 2.8
Oct. 7.1	43.56 −.04	65.0 2.4	51.84 .13	33.0 3.5	46.52 −.03	79.8 1.8	47.25 .10	54.9 3.1
17.0	43.56 +.04	62.6 2.3	51.75 −.05	29.3 3.7	46.51 +.01	77.8 2.1	47.18 −.04	51.6 3.4
27.0	43.65 .14	60.3 2.2	51.74 +.04	25.6 3.8	46.55 .06	75.6 2.3	47.16 +.02	48.1 3.6
Nov. 6.0	43.83 .23	58.2 1.9	51.83 .14	21.7 3.9	46.64 .11	73.1 2.5	47.22 .09	44.5 3.7
15.9	44.10 .31	56.4 1.6	52.02 .23	17.8 3.8	46.77 .16	70.5 2.7	47.34 .16	40.7 3.7
25.9	44.46 .39	55.0 1.2	52.30 .32	14.0 3.7	46.96 .21	67.8 2.8	47.54 .23	37.0 3.7
Dec. 5.9	44.88 .46	54.0 0.7	52.67 .41	10.5 3.4	47.19 .25	64.9 2.8	47.80 .29	33.4 3.5
15.9	45.37 .51	53.5 −0.2	53.12 .48	7.2 3.0	47.46 .29	62.2 2.7	48.13 .35	30.0 3.3
25.8	45.90 .54	53.5 +0.3	53.64 .55	4.4 2.6	47.76 .31	59.5 2.6	48.50 .40	26.9 2.9
35.8	46.46 +.56	54.1 +0.8	54.21 +.59	2.0 −2.1	48.08 +.33	56.9 −2.4	48.92 +.43	24.2 −2.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*5 Ursæ Minoris.		α^2 Centauri.		ε Bootis.		α^2 Libræ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 14 27	° ′ 76 15	h m 14 30	° ′ 60 17	h m 14 39	° ′ 27 36	h m 14 43	° ′ 15 30
	s	″	s	″	s	″	s	″
Jan. 0.8	46.63 +.88	57.0 −2.4	49.72 +.53	33.2 0.0	19.54 +.32	67.0 −2.6	42.92 +.32	4.2 +1.6
10.8	47.55 .95	54.9 1.8	50.27 .55	33.5 +0.5	19.87 .33	64.5 2.3	43.25 .33	5.8 1.7
20.8	48.53 1.00	53.5 1.2	50.83 .56	34.3 1.0	20.21 .34	62.4 1.9	43.58 .33	7.5 1.7
30.7	49.54 1.01	52.6 −0.5	51.39 .55	35.5 1.4	20.55 .34	60.7 1.5	43.91 .33	9.2 1.7
Feb. 9.7	50.55 .99	52.5 +0.2	51.93 .53	37.2 1.8	20.89 .33	59.5 1.0	44.23 .31	10.9 1.6
19.7	51.52 .93	53.0 0.8	52.44 .49	39.1 2.1	21.21 .31	58.7 −0.5	44.54 .29	12.5 1.5
Mar. 1.7	52.41 .84	54.1 1.4	52.91 .45	41.4 2.4	21.50 .28	58.5 0.0	44.82 .27	13.9 1.4
11.6	53.20 .73	55.9 2.0	53.34 .40	44.0 2.6	21.77 .25	58.8 +0.5	45.08 .24	15.2 1.2
21.6	53.86 .59	58.1 2.4	53.71 .34	46.7 2.7	22.00 .22	59.6 1.0	45.31 .21	16.4 1.0
31.6	54.38 .44	60.8 2.8	54.03 .29	49.5 2.8	22.20 .18	60.8 1.3	45.51 .19	17.3 0.8
Apr. 10.6	54.74 .28	63.7 3.0	54.28 .23	52.3 2.9	22.36 .14	62.3 1.6	45.68 .16	18.0 0.7
20.5	54.94 +.12	66.7 3.1	54.48 .17	55.2 2.8	22.49 .11	64.0 1.9	45.83 .13	18.6 0.5
30.5	54.98 −.04	69.8 3.1	54.63 .11	58.0 2.8	22.58 .07	66.0 2.0	45.94 .10	19.1 0.4
May 10.5	54.86 .19	72.9 3.0	54.70 +.05	60.7 2.6	22.64 .04	68.0 2.0	46.02 .07	19.4 0.2
20.4	54.59 .34	75.8 2.7	54.72 −.01	63.3 2.5	22.66 +.01	70.1 2.0	46.08 .04	19.5 +0.1
30.4	54.18 .46	78.4 2.4	54.68 .07	65.7 2.2	22.65 −.02	72.0 1.9	46.10 +.01	19.6 0.0
June 9.4	53.66 .58	80.6 2.0	54.58 .13	67.8 2.0	22.61 .05	73.9 1.8	46.10 −.02	19.5 −0.1
19.4	53.03 .67	82.5 1.6	54.42 .18	69.6 1.6	22.54 .08	75.6 1.6	46.07 .04	19.4 0.1
29.3	52.32 .75	83.8 1.1	54.21 .23	71.0 1.3	22.45 .10	77.0 1.3	46.02 .07	19.2 0.2
July 9.3	51.54 .80	84.7 0.6	53.96 .28	72.1 0.9	22.33 .13	78.2 1.0	45.93 .09	19.0 0.3
19.3	50.72 .84	85.0 +0.1	53.66 .31	72.8 +0.4	22.20 .14	79.1 0.7	45.83 .11	18.7 0.3
29.3	49.87 .85	84.8 −0.5	53.33 .34	73.0 0.0	22.04 .16	79.6 +0.4	45.71 .13	18.3 0.4
Aug. 8.2	49.02 .85	84.1 1.0	52.99 .35	72.8 −0.4	21.88 .17	79.8 0.0	45.58 .14	17.9 0.4
18.2	48.18 .82	82.8 1.5	52.64 .35	72.2 0.9	21.71 .17	79.7 −0.3	45.43 .14	17.4 0.5
28.2	47.37 .78	81.1 2.0	52.29 .33	71.1 1.3	21.55 .16	79.2 0.7	45.29 .14	16.9 0.5
Sept. 7.1	46.62 .71	78.9 2.4	51.97 .30	69.7 1.6	21.39 .15	78.3 1.0	45.15 .13	16.5 0.4
17.1	45.95 .63	76.2 2.8	51.70 .25	67.9 1.9	21.25 .13	77.1 1.4	45.03 .11	16.1 0.4
27.1	45.37 .53	73.2 3.2	51.47 .19	65.8 2.1	21.13 .10	75.5 1.7	44.93 .08	15.7 0.3
Oct. 7.1	44.90 .40	69.8 3.5	51.31 .12	63.6 2.3	21.04 .07	73.7 2.0	44.86 −.05	15.4 −0.2
17.0	44.56 .26	66.2 3.7	51.23 −.03	61.3 2.3	21.00 −.02	71.4 2.3	44.84 .00	15.3 0.0
27.0	44.37 −.11	62.4 3.9	51.24 +.06	58.9 2.3	21.00 +.03	69.0 2.6	44.86 +.05	15.4 +0.2
Nov. 6.0	44.33 +.05	58.5 3.9	51.35 .15	56.7 2.1	21.05 .08	66.2 2.8	44.93 .10	15.6 0.4
16.0	44.46 .21	54.5 3.9	51.55 .24	54.7 1.9	21.15 .13	63.3 3.0	45.05 .15	16.1 0.6
25.9	44.76 .38	50.7 3.7	51.84 .33	53.0 1.5	21.31 .18	60.3 3.0	45.22 .19	16.9 0.9
Dec. 5.9	45.21 .53	47.0 3.5	52.21 .40	51.6 1.1	21.51 .23	57.2 3.1	45.44 .24	17.9 1.1
15.9	45.82 .68	43.7 3.2	52.65 .47	50.7 0.7	21.76 .27	54.2 3.0	45.70 .28	19.1 1.3
25.8	46.57 .80	40.7 2.7	53.14 .52	50.2 −0.2	22.05 .30	51.3 2.8	45.99 .31	20.5 1.5
35.8	47.43 +.91	38.2 −2.2	53.68 +.55	50.2 +0.3	22.37 +.33	48.6 −2.5	46.31 +.33	22.1 +1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*β Ursæ Minoris.		β Bootis.		3 Libræ.		μ¹ Bootis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 14 51	° ′ 74 40	h m 14 57	° ′ 40 53	h m 15 10	° ′ 8 54	h m 15 19	° ′ 37 49
	s	″	s	″	s	″	s	″
Jan. 0.8	3.31 +.74	45.6 −2.6	3.36 +.34	56.1 −2.9	2.17 +.30	10.4 +1.7	35.17 +.31	46.5 −3.0
10.8	4.09 .82	43.2 2.1	3.71 .36	53.5 2.5	2.48 .31	12.1 1.7	35.49 .34	43.7 2.6
20.8	4.95 .88	41.4 1.5	4.08 .37	51.2 2.0	2.80 .32	13.9 1.7	35.84 .35	41.3 2.2
30.8	5.85 .91	40.2 0.8	4.46 .38	49.5 1.4	3.12 .32	15.5 1.6	36.20 .36	39.4 1.6
Feb. 9.7	6.77 .90	39.7 −0.1	4.84 .37	48.3 0.9	3.44 .31	17.1 1.5	36.56 .36	38.0 1.1
19.7	7.66 .86	39.9 +0.5	5.20 .35	47.8 −0.3	3.74 .30	18.5 1.3	36.92 .35	37.2 −0.5
Mar. 1.7	8.50 .80	40.7 1.1	5.54 .33	47.8 +0.3	4.03 .28	19.7 1.1	37.26 .33	37.0 +0.1
11.7	9.26 .71	42.2 1.7	5.86 .30	48.4 0.9	4.30 .26	20.7 0.9	37.57 .30	37.4 0.6
21.6	9.91 .60	44.2 2.2	6.14 .26	49.6 1.4	4.55 .23	21.5 0.7	37.85 .27	38.3 1.1
31.6	10.45 .47	46.6 2.6	6.37 .22	51.2 1.8	4.76 .20	22.0 0.4	38.11 .23	39.7 1.6
Apr. 10.6	10.85 .33	49.4 2.9	6.57 .17	53.2 2.1	4.95 .18	22.3 0.2	38.32 .19	41.5 2.0
20.5	11.12 .19	52.4 3.1	6.72 .13	55.5 2.4	5.12 .15	22.5 +0.1	38.49 .15	43.6 2.2
30.5	11.23 +.05	55.5 3.1	6.82 .09	57.9 2.5	5.25 .12	22.5 −0.1	38.62 .11	46.0 2.4
May 10.5	11.21 −.09	58.6 3.0	6.89 +.04	60.5 2.6	5.36 .09	22.3 0.2	38.72 .07	48.5 2.5
20.5	11.05 .23	61.6 2.9	6.91 .00	63.1 2.5	5.43 .06	22.0 0.3	38.77 +.03	51.0 2.5
30.4	10.76 .35	64.4 2.6	6.89 −.04	65.6 2.4	5.48 +.03	21.7 0.4	38.78 −.01	53.5 2.4
June 9.4	10.35 .46	66.9 2.3	6.84 .07	67.9 2.2	5.50 .00	21.3 0.4	38.75 .04	55.9 2.3
19.4	9.84 .55	69.0 1.9	6.75 .11	70.0 1.9	5.49 −.02	20.9 0.4	38.69 .08	58.1 2.0
29.4	9.25 .63	70.7 1.4	6.62 .14	71.8 1.6	5.45 .05	20.4 0.4	38.60 .11	60.0 1.8
July 9.3	8.58 .69	71.8 0.9	6.47 .17	73.2 1.2	5.39 .08	20.0 0.4	38.47 .14	61.6 1.4
19.3	7.86 .74	72.5 +0.4	6.29 .19	74.2 0.8	5.30 .10	19.5 0.4	38.31 .17	62.9 1.1
29.3	7.10 .77	72.7 −0.1	6.09 .20	74.9 +0.4	5.18 .12	19.1 0.4	38.13 .19	63.7 0.7
Aug. 8.2	6.32 .78	72.3 0.6	5.89 .21	75.1 0.0	5.06 .14	18.7 0.4	37.93 .21	64.2 +0.2
18.2	5.54 .77	71.4 1.2	5.67 .22	74.8 −0.4	4.91 .14	18.4 0.3	37.72 .21	64.2 −0.2
28.2	4.78 .74	70.0 1.7	5.45 .22	74.2 0.9	4.77 .15	18.1 0.3	37.50 .22	63.8 0.6
Sept. 7.2	4.05 .70	68.1 2.1	5.23 .20	73.1 1.3	4.62 .14	17.8 0.2	37.29 .21	63.0 1.0
17.1	3.39 .63	65.7 2.6	5.04 .18	71.5 1.7	4.49 .12	17.6 −0.1	37.08 .19	61.8 1.4
27.1	2.79 .54	63.0 3.0	4.87 .15	69.6 2.1	4.37 .10	17.6 0.0	36.90 .17	60.1 1.8
Oct. 7.1	2.30 .44	59.8 3.3	4.73 .11	67.3 2.5	4.29 .07	17.7 +0.2	36.75 .13	58.1 2.2
17.1	1.91 .32	56.4 3.6	4.64 .07	64.6 2.8	4.24 −.03	17.9 0.3	36.64 .09	55.6 2.6
27.0	1.65 .19	52.7 3.8	4.60 −.01	61.6 3.1	4.23 +.02	18.3 0.5	36.57 −.04	52.9 2.9
Nov. 6.0	1.53 −.04	48.8 3.9	4.61 +.04	58.4 3.3	4.27 .06	19.0 0.7	36.56 +.02	49.9 3.1
16.0	1.56 +.10	44.9 3.9	4.69 .10	55.0 3.4	4.36 .12	19.8 0.9	36.61 .07	46.7 3.3
25.9	1.74 .26	41.0 3.8	4.82 .16	51.5 3.5	4.50 .16	20.9 1.2	36.71 .13	43.3 3.4
Dec. 5.9	2.07 .41	37.2 3.7	5.01 .22	48.0 3.5	4.69 .21	22.2 1.4	36.87 .19	39.9 3.4
15.9	2.56 .55	33.7 3.4	5.26 .27	44.6 3.3	4.92 .25	23.6 1.5	37.09 .24	36.5 3.3
25.9	3.17 .67	30.5 3.0	5.55 .31	41.4 3.1	5.19 .28	25.2 1.7	37.36 .29	33.2 3.1
35.8	3.90 +.77	27.8 −2.5	5.89 +.35	38.5 −2.7	5.49 +.31	26.9 +1.7	37.66 +.32	30.2 −2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*γ² Ursæ Minoris.		α Coronæ Borealis.		α Serpentis.		ε Serpentis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 15 20	° ′ 72 17	h m 15 29	° ′ 27 8	h m 15 37	° ′ 6 49	h m 15 44	° ′ 4 51
	s	″	s	″	s	″	s	″
Jan. 0.9	53.95 +.58	25.8 −3.0	11.69 +.28	59.4 −2.8	52.95 +.27	62.7 −2.2	21.26 +.28	67.3 −2.1
10.8	54.59 .67	23.1 2.5	11.99 .31	56.7 2.5	53.23 .29	60.5 2.1	21.54 .29	65.2 2.0
20.8	55.30 .74	20.8 1.9	12.31 .32	54.3 2.2	53.53 .31	58.5 1.9	21.84 .30	63.2 1.9
30.8	56.07 .78	19.2 1.3	12.64 .33	52.3 1.8	53.85 .31	56.7 1.7	22.15 .31	61.4 1.7
Feb. 9.8	56.86 .79	18.3 −0.6	12.97 .33	50.8 1.3	54.16 .31	55.1 1.4	22.46 .31	59.9 1.4
19.7	57.65 .78	18.0 +0.1	13.30 .32	49.8 0.8	54.46 .30	53.8 1.1	22.77 .30	58.6 1.1
Mar. 1.7	58.41 .74	18.5 0.7	13.61 .30	49.3 −0.2	54.76 .29	52.9 0.7	23.06 .29	57.7 0.8
11.7	59.12 .67	19.5 1.3	13.90 .28	49.3 +0.3	55.03 .27	52.4 −0.3	23.34 .27	57.1 0.4
21.7	59.76 .59	21.2 1.9	14.17 .25	49.8 0.7	55.29 .24	52.2 0.0	23.60 .25	56.9 −0.1
31.6	60.30 .49	23.3 2.4	14.41 .22	50.8 1.2	55.52 .22	52.4 +0.3	23.84 .22	57.0 +0.2
Apr. 10.6	60.74 .38	25.9 2.7	14.62 .19	52.1 1.5	55.73 .19	52.9 0.6	24.05 .20	57.4 0.5
20.6	61.06 .26	28.8 3.0	14.80 .16	53.8 1.8	55.91 .17	53.6 0.8	24.24 .17	58.0 0.7
30.5	61.26 .14	31.8 3.1	14.94 .12	55.8 2.0	56.06 .14	54.6 1.0	24.39 .14	58.9 0.9
May 10.5	61.33 +.02	35.0 3.1	15.05 .09	57.9 2.1	56.19 .11	55.7 1.2	24.53 .12	59.9 1.1
20.5	61.29 −.10	38.1 3.0	15.12 .06	60.0 2.2	56.28 .08	56.9 1.2	24.63 .09	61.0 1.2
30.5	61.13 .21	41.0 2.9	15.16 +.02	62.2 2.1	56.35 .05	58.2 1.3	24.70 .06	62.2 1.2
June 9.4	60.86 .32	43.8 2.6	15.16 −.01	64.3 2.0	56.38 +.02	59.5 1.2	24.74 +.03	63.4 1.2
19.4	60.49 .41	46.2 2.2	15.13 .05	66.2 1.9	56.38 −.01	60.7 1.2	24.75 .00	64.5 1.1
29.4	60.04 .49	48.2 1.8	15.07 .08	68.0 1.6	56.36 .04	61.8 1.1	24.73 −.04	65.6 0.9
July 9.4	59.50 .56	49.9 1.4	14.98 .11	69.5 1.4	56.30 .07	62.9 0.9	24.68 .07	66.6 0.9
19.3	58.91 .62	51.0 0.9	14.86 .13	70.7 1.1	56.22 .10	63.7 0.8	24.60 .09	67.4 0.8
29.3	58.26 .66	51.6 +0.4	14.71 .15	71.7 0.7	56.11 .12	64.5 0.6	24.49 .12	68.1 0.6
Aug. 8.3	57.59 .68	51.7 −0.1	14.55 .17	72.2 +0.4	55.98 .14	65.0 0.4	24.37 .14	68.7 0.5
18.2	56.90 .69	51.3 0.7	14.37 .18	72.4 0.0	55.83 .15	65.4 +0.3	24.22 .15	69.1 0.3
28.2	56.20 .68	50.3 1.2	14.19 .18	72.3 −0.3	55.68 .16	65.5 0.0	24.07 .15	69.3 +0.1
Sept. 7.2	55.53 .66	48.9 1.7	14.00 .18	71.8 0.7	55.52 .15	65.4 −0.2	23.91 .15	69.2 −0.1
17.2	54.89 .61	46.9 2.2	13.83 .17	70.9 1.1	55.37 .14	65.2 0.4	23.76 .14	69.0 0.3
27.1	54.31 .54	44.5 2.6	13.67 .14	69.7 1.4	55.23 .12	64.7 0.6	23.62 .13	68.6 0.5
Oct. 7.1	53.80 .46	41.7 3.0	13.54 .11	68.1 1.8	55.12 .09	63.9 0.9	23.51 .10	67.9 0.8
17.1	53.38 .37	38.6 3.3	13.44 .08	66.1 2.1	55.04 .06	62.9 1.1	23.42 .06	67.0 1.0
27.1	53.06 .26	35.1 3.6	13.39 −.03	63.8 2.4	55.00 −.02	61.6 1.4	23.38 −.02	65.9 1.2
Nov. 6.0	52.87 −.13	31.4 3.8	13.38 +.02	61.3 2.7	55.01 +.03	60.2 1.6	23.38 +.02	64.5 1.5
16.0	52.80 .00	27.5 3.9	13.43 .07	58.5 2.9	55.06 .08	58.4 1.8	23.43 .07	63.0 1.7
26.0	52.87 +.14	23.6 3.9	13.53 .13	55.6 3.0	55.17 .13	56.5 2.0	23.53 .12	61.1 1.9
Dec. 5.9	53.07 .27	19.7 3.8	13.68 .18	52.5 3.1	55.32 .18	54.4 2.1	23.67 .17	59.2 2.0
15.9	53.41 .40	16.0 3.6	13.88 .22	49.4 3.0	55.52 .22	52.2 2.2	23.87 .21	57.1 2.1
25.9	53.87 .52	12.6 3.2	14.13 .26	46.4 2.9	55.76 .25	50.0 2.2	24.10 .25	54.9 2.1
35.9	54.45 +.62	9.5 −2.8	14.41 +.29	43.6 −2.7	56.03 +.28	47.7 −2.2	24.37 +.28	52.8 −2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*ζ Ursæ Minoris.		ε Coronæ Borealis.		δ Scorpii.		β¹ Scorpii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	15 48	78 11	15 52	27 14	15 52	22 14	15 57	19 26
	s	″	s	″	s	″	s	″
Jan. 0.9	38.58 +.71	15.8 −3.1	12.94 +.26	69.5 −2.9	40.30 +.28	57.5 +0.9	54.10 +.28	52.1 +1.0
10.9	39.37 .86	12.9 2.7	13.22 .29	66.7 2.6	40.60 .31	58.5 1.0	54.39 .31	53.2 1.1
20.8	40.29 .98	10.4 2.1	13.52 .31	64.3 2.3	40.93 .33	59.6 1.1	54.71 .32	54.3 1.2
30.8	41.33 1.07	8.6 1.5	13.84 .32	62.1 1.9	41.26 .33	60.8 1.2	55.03 .33	55.6 1.2
Feb. 9.8	42.43 1.12	7.4 0.9	14.17 .33	60.5 1.4	41.60 .34	62.0 1.2	55.36 .33	56.8 1.2
19.8	43.56 1.12	6.8 −0.2	14.50 .32	59.3 0.9	41.93 .33	63.2 1.2	55.69 .32	58.0 1.2
Mar. 1.7	44.68 1.09	6.9 +0.4	14.81 .31	58.7 −0.4	42.25 .31	64.4 1.1	56.01 .31	59.1 1.1
11.7	45.75 1.02	7.7 1.1	15.12 .29	58.6 +0.1	42.56 .30	65.5 1.1	56.31 .29	60.1 1.0
21.7	46.72 .92	9.1 1.7	15.40 .27	59.0 0.6	42.85 .28	66.5 1.0	56.60 .27	61.0 0.8
31.6	47.58 .79	11.0 2.2	15.65 .24	59.9 1.1	43.11 .25	67.4 0.8	56.86 .25	61.8 0.7
Apr. 10.6	48.30 .63	13.4 2.6	15.88 .21	61.2 1.5	43.35 .23	68.2 0.7	57.10 .23	62.5 0.6
20.6	48.85 .46	16.1 2.9	16.08 .18	62.8 1.8	43.57 .20	68.9 0.6	57.32 .20	63.0 0.5
30.6	49.22 .27	19.1 3.1	16.24 .15	64.7 2.0	43.76 .17	69.5 0.6	57.51 .18	63.4 0.4
May 10.5	49.40 +.10	22.2 3.1	16.37 .11	66.9 2.2	43.92 .14	70.0 0.5	57.67 .15	63.8 0.3
20.5	49.41 −.08	25.4 3.1	16.47 .08	69.1 2.2	44.05 .11	70.4 0.4	57.80 .12	64.0 0.2
30.5	49.23 .27	28.4 3.0	16.53 .04	71.3 2.2	44.14 .08	70.8 0.3	57.90 .08	64.2 0.1
June 9.5	48.88 .43	31.3 2.7	16.55 +.01	73.5 2.1	44.21 .05	71.1 0.3	57.97 .05	64.3 0.1
19.4	48,36 .59	33.9 2.4	16.54 −.03	75.6 2.0	44.24 +.01	71.3 0.2	58.01 +.02	64.4 +0.1
29.4	47.70 .72	36.2 2.1	16.49 .06	77.5 1.8	44.23 −.02	71.5 0.1	58.00 −.02	64.4 0.0
July 9.4	46.91 .84	38.0 1.6	16.41 .09	79.2 1.5	44.19 .06	71.6 +0.1	57.97 .05	64.4 0.0
19.3	46.02 .94	39.5 1.2	16.31 .12	80.6 1.2	44.11 .09	71.6 0.0	57.90 .08	64.4 −0.1
29.3	45.04 1.01	40.4 0.7	16.17 .15	81.6 0.9	44.01 .12	71.6 −0.1	57.80 .11	64.2 0.1
Aug. 8.3	43.99 1.07	40.8 +0.2	16.01 .17	82.4 0.6	43.88 .14	71.5 0.2	57.67 .14	64.1 0.2
18.3	42.90 1.09	40.7 −0.4	15.83 .18	82.8 +0.2	43.73 .16	71.3 0.2	57.53 .15	63.9 0.2
28.2	41.80 1.09	40.1 0.9	15.64 .19	82.8 −0.1	43.57 .17	71.0 0.3	57.36 .16	63.7 0.3
Sept. 7.2	40.71 1.07	39.0 1.4	15.44 .19	82.5 0.5	43.40 .17	70.7 0.4	57.20 .16	63.4 0.3
17.2	39.66 1.02	37.4 1.9	15.26 .18	81.8 0.9	43.23 .16	70.3 0.4	57.04 .15	63.0 0.3
27.2	38.67 .94	35.3 2.3	15.08 .16	80.7 1.3	43.08 .14	69.9 0.4	56.89 .14	62.7 0.3
Oct. 7.1	37.77 .84	32.7 2.7	14.93 .13	79.2 1.6	42.96 .11	69.5 0.4	56.76 .11	62.4 0.3
17.1	37.00 .71	29.8 3.1	14.81 .10	77.4 2.0	42.87 .07	69.1 0.3	56.67 .07	62.2 0.2
27.1	36.36 .54	26.5 3.4	14.73 .06	75.3 2.3	42.82 −.02	68.8 0.2	56.62 −.03	62.0 −0.1
Nov. 6.0	35.89 .37	23.0 3.6	14.70 −.01	72.8 2.6	42.83 +.03	68.6 −0.1	56.62 +.02	62.0 0.0
16.0	35.60 −.19	19.3 3.8	14.72 +.05	70.1 2.8	42.88 .08	68.5 0.0	56.67 .07	62.1 +0.2
26.0	35.50 .00	15.4 3.8	14.80 .10	67.2 3.0	42.99 .13	68.6 +0.2	56.77 .13	62.4 0.4
Dec. 6.0	35.60 +.21	11.6 3.8	14.92 .15	64.2 3.1	43.15 .19	68.9 0.4	56.92 .18	62.8 0.6
15.9	35.91 .41	7.9 3.6	15.10 .20	61.1 3.1	43.37 .23	69.5 0.6	57.13 .22	63.5 0.8
25.9	36.42 .59	4.3 3.4	15.32 .24	58.0 3.0	43.62 .27	70.2 0.8	57.37 .26	64.4 0.9
35.9	37.10 +.76	1.1 −3.0	15.58 +.28	55.1 −2.8	43.91 +.30	71.1 +1.0	57.65 +.29	65.4 +1.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*Groombridge 2320.		δ Ophiuchi.		τ Herculis.		α Scorpii. (*Antares.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 16 5	° ′ 68 8	h m 16 7	° ′ 3 21	h m 16 15	° ′ 46 37	h m 16 21	° ′ 26 8
	s	″	s	″	s	″	s	″
Jan. 0.9	55.52 +.41	53.0 −3.4	33.10 +.26	31.2 +1.7	49.46 +.27	13.2 −3.3	27.66 +.28	26.7 +0.5
10.9	55.97 .49	49.9 3.0	33.37 .28	32.9 1.7	49.76 .31	10.0 3.0	27.95 .30	27.3 0.7
20.9	56.50 .56	47.1 2.5	33.66 .30	34.7 1.7	50.09 .35	7.1 2.6	28.27 .32	28.1 0.8
30.8	57.09 .61	44.9 1.9	33.97 .31	36.3 1.5	50.45 .37	4.8 2.1	28.60 .34	29.0 0.9
Feb. 9.8	57.72 .64	43.4 1.2	34.27 .31	37.7 1.3	50.83 .39	2.9 1.5	28.94 .34	29.9 0.9
19.8	58.37 .65	42.4 −0.6	34.58 .30	38.9 1.1	51.22 .39	1.7 0.9	29.28 .34	30.9 1.0
Mar. 1.7	59.02 .64	42.2 +0.1	34.88 .29	39.9 0.9	51.61 .38	1.1 −0.3	29.62 .33	31.8 1.0
11.7	59.64 .60	42.7 0.8	35.17 .28	40.7 0.6	51.98 .36	1.2 +0.4	29.94 .32	32.8 0.9
21.7	60.23 .55	43.7 1.4	35.44 .26	41.1 +0.3	52.33 .34	1.8 0.9	30.26 .30	33.7 0.9
31.7	60.75 .49	45.4 1.9	35.70 .24	41.3 0.0	52.66 .31	3.1 1.5	30.55 .28	34.5 0.8
Apr. 10.6	61.21 .41	47.6 2.4	35.93 .22	41.2 −0.2	52.95 .27	4.8 2.0	30.82 .26	35.3 0.7
20.6	61.58 .33	50.2 2.7	36.14 .20	40.9 0.4	53.20 .23	7.0 2.3	31.07 .24	36.0 0.7
30.6	61.86 .23	53.1 3.0	36.32 .17	40.5 0.5	53.41 .18	9.5 2.6	31.29 .21	36.7 0.6
May 10.5	62.04 .14	56.2 3.1	36.48 .14	39.9 0.7	53.57 .14	12.3 2.8	31.48 .18	37.3 0.6
20.5	62.13 +.04	59.4 3.2	36.61 .11	39.1 0.7	53.68 .09	15.2 2.9	31.65 .15	37.8 0.5
30.5	62.12 −.06	62.5 3.1	36.70 .08	38.4 0.8	53.74 +.04	18.1 2.9	31.78 .11	38.4 0.5
June 9.5	62.02 .15	65.6 2.9	36.77 .05	37.5 0.8	53.76 −.01	21.0 2.8	31.87 .08	38.8 0.5
19.4	61.82 .23	68.4 2.7	36.80 +.02	36.7 0.8	53.72 .06	23.7 2.6	31.93 +.04	39.3 0.4
29.4	61.54 .32	70.9 2.4	36.81 −.01	36.0 0.7	53.64 .10	26.2 2.3	31.95 .00	39.7 0.4
July 9.4	61.18 .39	73.1 2.0	36.78 .05	35.3 0.7	53.52 .15	28.4 2.0	31.93 −.04	40.0 0.3
19.4	60.75 .45	74.8 1.5	36.71 .08	34.7 0.6	53.35 .19	30.3 1.7	31.87 .07	40.3 0.2
29.3	60.27 .51	76.1 1.1	36.62 .10	34.1 0.5	53.14 .22	31.7 1.2	31.78 .11	40.5 +0.1
Aug. 8.3	59.74 .55	76.9 +0.5	36.50 .13	33.6 0.4	52.91 .25	32.8 0.8	31.66 .14	40.5 0.0
18.3	59.18 .57	77.2 0.0	36.36 .14	33.3 0.3	52.64 .27	33.3 +0.3	31.51 .16	40.5 −0.1
28.3	58.60 .58	77.0 −0.5	36.21 .16	33.1 0.2	52.37 .28	33.5 −0.1	31.34 .17	40.4 0.2
Sept. 7.2	58.02 .58	76.2 1.0	36.05 .16	32.9 −0.1	52.08 .28	33.1 0.6	31.16 .18	40.2 0.3
17.2	57.44 .56	75.0 1.5	35.89 .15	32.9 +0.1	51.80 .28	32.2 1.1	30.98 .17	39.9 0.4
27.2	56.90 .52	73.2 2.0	35.75 .14	33.1 0.2	51.53 .26	30.9 1.5	30.81 .15	39.5 0.4
Oct. 7.1	56.41 .46	71.0 2.5	35.62 .11	33.4 0.4	51.29 .23	29.1 2.0	30.67 .13	39.0 0.5
17.1	55.97 .39	68.3 2.9	35.52 .08	33.9 0.6	51.08 .19	26.9 2.4	30.55 .09	38.5 0.5
27.1	55.62 .31	65.2 3.2	35.46 −.04	34.5 0.8	50.91 .14	24.3 2.8	30.48 −.05	38.1 0.4
Nov. 6.1	55.35 .21	61.8 3.5	35.45 +.01	35.4 1.0	50.80 .08	21.3 3.1	30.45 .00	37.7 0.4
16.0	55.19 −.11	58.2 3.7	35.48 .06	36.5 1.1	50.75 −.02	18.1 3.4	30.48 +.05	37.3 0.2
26.0	55.14 +.01	54.4 3.8	35.56 .11	37.7 1.3	50.77 +.05	14.6 3.5	30.56 .11	37.2 −0.1
Dec. 6.0	55.20 .12	50.5 3.9	35.69 .15	39.2 1.5	50.85 .11	11.0 3.6	30.70 .16	37.2 +0.1
16.0	55.38 .23	46.7 3.8	35.87 .20	40.7 1.6	50.99 .18	7.3 3.6	30.89 .21	37.3 0.2
25.9	55.67 .34	43.0 3.6	36.09 .24	42.5 1.7	51.20 .24	3.7 3.5	31.12 .26	37.7 0.4
35.9	56.06 +.44	39.6 −3.3	36.34 +.27	44.2 +1.7	51.47 +.29	0.4 −3.2	31.40 +.29	38.2 +0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Draconis.		*A Draconis.		ζ Ophiuchi.		*α Trianguli Australis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 16 22	° ′ 61 48	h m 16 28	° ′ 69 2	h m 16 30	° ′ 10 18	h m 16 34	° ′ 68 46
	s	″	s	″	s	″	s	″
Jan. 0.9	12.22 +.31	17.7 −3.5	11.52 +.36	43.4 −3.5	1.19 +.24	6.6 +1.3	56.69 +.55	57.9 −1.7
10.9	12.57 .38	14.4 3.1	11.93 .46	40.0 3.1	1.45 .27	8.0 1.4	57.29 .63	56.4 1.3
20.8	12.99 .44	11.5 2.7	12.43 .54	37.1 2.7	1.74 .29	9.3 1.3	57.95 .69	55.2 0.9
30.8	13.46 .49	9.1 2.1	13.01 .60	34.7 2.1	2.04 .31	10.6 1.3	58.67 .73	54.5 0.5
Feb. 9.8	13.96 .51	7.2 1.5	13.64 .64	32.8 1.5	2.35 .31	11.9 1.2	59.42 .76	54.2 −0.1
19.8	14.49 .52	6.1 0.8	14.30 .66	31.7 0.8	2.66 .31	13.0 1.0	60.19 .77	54.3 +0.3
Mar. 1.7	15.01 .52	5.6 −0.2	14.97 .66	31.1 −0.2	2.97 .30	13.9 0.8	60.96 .76	54.9 0.7
11.7	15.52 .50	5.7 +0.5	15.62 .64	31.3 +0.5	3.27 .29	14.7 0.6	61.71 .74	55.8 1.1
21.7	16.01 .47	6.6 1.1	16.25 .60	32.1 1.1	3.55 .28	15.2 0.4	62.44 .71	57.1 1.4
31.7	16.46 .42	8.0 1.7	16.82 .54	33.6 1.7	3.82 .26	15.5 +0.2	63.13 .67	58.7 1.7
Apr. 10.6	16.85 .36	10.0 2.2	17.33 .47	35.6 2.2	4.07 .24	15.7 0.0	63.77 .61	60.6 2.0
20.6	17.19 .30	12.4 2.6	17.76 .38	38.0 2.6	4.31 .22	15.6 −0.1	64.36 .55	62.8 2.3
30.6	17.45 .23	15.2 2.9	18.10 .29	40.8 2.9	4.52 .20	15.4 0.2	64.87 .48	65.1 2.4
May 10.5	17.65 .16	18.2 3.1	18.34 .19	43.8 3.1	4.70 .17	15.1 0.3	65.32 .40	67.6 2.6
20.5	17.77 .08	21.3 3.2	18.48 +.09	47.0 3.2	4.85 .14	14.7 0.4	65.67 .32	70.3 2.7
30.5	17.82 +.01	24.5 3.1	18.52 −.01	50.2 3.2	4.98 .11	14.3 0.5	65.94 .23	73.0 2.7
June 9.5	17.79 −.06	27.6 3.0	18.46 .11	53.3 3.0	5.07 .08	13.8 0.5	66.12 .13	75.7 2.7
19.4	17.69 .14	30.5 2.8	18.29 .21	56.3 2.8	5.13 .04	13.3 0.5	66.19 +.03	78.3 2.6
29.4	17.52 .20	33.2 2.5	18.04 .30	59.0 2.6	5.15 +.01	12.9 0.4	66.17 −.07	80.8 2.4
July 9.4	17.28 .26	35.5 2.2	17.70 .38	61.4 2.2	5.14 −.03	12.4 0.4	66.04 .17	83.1 2.2
19.4	16.99 .32	37.5 1.8	17.28 .45	63.4 1.8	5.09 .06	12.1 0.4	65.83 .26	85.2 1.9
29.3	16.64 .37	39.0 1.3	16.79 .51	65.0 1.3	5.01 .09	11.7 0.3	65.52 .34	86.9 1.5
Aug. 8.3	16.25 .41	40.1 0.8	16.25 .56	66.1 0.9	4.90 .12	11.4 0.3	65.14 .41	88.3 1.2
18.3	15.83 .43	40.7 +0.3	15.67 .60	66.7 +0.3	4.77 .14	11.1 0.2	64.70 .47	89.2 0.7
28.2	15.39 .45	40.8 −0.2	15.05 .62	66.8 −0.2	4.62 .16	10.9 0.2	64.21 .50	89.7 +0.3
Sept. 7.2	14.93 .45	40.3 0.7	14.43 .62	66.4 0.7	4.45 .16	10.8 0.1	63.70 .51	89.7 −0.2
17.2	14.49 .44	39.4 1.2	13.81 .61	65.4 1.2	4.29 .16	10.7 −0.1	63.19 .50	89.3 0.7
27.2	14.06 .41	37.9 1.7	13.22 .58	64.0 1.7	4.13 .15	10.6 0.0	62.71 .46	88.3 1.1
Oct. 7.1	13.66 .37	35.9 2.2	12.66 .53	62.0 2.2	3.99 .13	10.7 +0.1	62.27 .40	87.0 1.6
17.1	13.31 .32	33.5 2.6	12.16 .46	59.6 2.6	3.88 .09	10.9 0.2	61.90 .32	85.2 1.9
27.1	13.02 .26	30.7 3.0	11.73 .38	56.8 3.0	3.80 .05	11.2 0.4	61.62 .22	83.2 2.2
Nov. 6.1	12.80 .18	27.5 3.3	11.40 .29	53.6 3.3	3.77 −.01	11.6 0.5	61.46 −.11	80.8 2.4
16.0	12.66 −.09	24.0 3.6	11.16 .18	50.1 3.6	3.79 +.04	12.3 0.7	61.41 +.02	78.4 2.4
26.0	12.61 .00	20.3 3.8	11.04 −.06	46.4 3.8	3.85 .09	13.0 0.9	61.49 .14	75.9 2.4
Dec. 6.0	12.65 +.09	16.4 3.8	11.03 +.06	42.5 3.8	3.97 .13	14.0 1.0	61.69 .27	73.5 2.3
15.9	12.78 .18	12.6 3.8	11.15 .18	38.7 3.8	4.13 .18	15.1 1.2	62.02 .39	71.2 2.2
25.9	13.00 .26	8.9 3.6	11.39 .29	34.9 3.6	4.33 .22	16.3 1.3	62.47 .49	69.2 1.9
35.9	13.31 +.33	5.3 −3.4	11.73 +.39	31.4 −3.4	4.58 +.25	17.6 +1.4	63.01 +.58	67.5 −1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Herculis.		κ Ophiuchi.		d Herculis.		*ε Ursæ Minoris.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	16h 38m	39° 9′	16h 51m	9° 34′	16h 56m	33° 45′	16h 59m	82° 14′
	s	″	s	″	s	″	s	″
Jan. 0.9	26.22 +.23	66.0 −3.3	31.57 +.21	41.2 −2.2	48.27 +.20	22.5 −3.1	9.15 +.54	38.7 −3.5
10.9	26.47 .27	62.8 3.0	31.79 .24	39.0 2.2	48.49 .24	19.4 3.0	9.83 .83	35.4 3.2
20.9	26.76 .30	60.0 2.7	32.05 .27	36.9 2.0	48.75 .28	16.5 2.7	10.80 1.09	32.4 2.8
30.8	27.08 .33	57.5 2.2	32.33 .28	35.0 1.8	49.05 .30	14.0 2.3	12.01 1.31	29.8 2.3
Feb. 9.8	27.42 .34	55.5 1.7	32.62 .29	33.4 1.5	49.36 .32	12.0 1.8	13.41 1.48	27.7 1.7
19.8	27.77 .35	54.1 1.2	32.92 .30	32.0 1.1	49.69 .33	10.4 1.3	14.95 1.59	26.3 1.1
Mar. 1.8	28.12 .35	53.2 −0.6	33.22 .30	31.1 0.7	50.02 .33	9.4 0.7	16.57 1.64	25.5 −0.5
11.7	28.46 .34	52.9 0.0	33.51 .29	30.5 −0.4	50.35 .32	9.0 −0.1	18.22 1.63	25.3 +0.2
21.7	28.79 .32	53.3 +0.6	33.79 .28	30.4 0.0	50.67 .31	9.1 +0.4	19.82 1.56	25.8 0.8
31.7	29.10 .30	54.2 1.2	34.07 .26	30.6 +0.4	50.97 .29	9.8 0.9	21.33 1.44	26.9 1.4
Apr. 10.7	29.39 .27	55.7 1.7	34.32 .25	31.2 0.7	51.25 .27	11.0 1.4	22.69 1.26	28.6 1.9
20.6	29.64 .24	57.5 2.1	34.56 .22	32.1 1.0	51.51 .24	12.7 1.9	23.85 1.06	30.8 2.4
30.6	29.86 .20	59.8 2.4	34.77 .20	33.2 1.3	51.74 .21	14.7 2.2	24.78 .81	33.4 2.7
May 10.6	30.04 .16	62.3 2.6	34.96 .17	34.6 1.4	51.94 .18	17.1 2.4	25.46 .54	36.2 3.0
20.5	30.18 .12	65.0 2.7	35.12 .14	36.1 1.6	52.10 .14	19.6 2.6	25.86 +.26	39.3 3.1
30.5	30.28 .08	67.8 2.8	35.25 .11	37.7 1.6	52.22 .10	22.2 2.6	25.99 −.02	42.4 3.1
June 9.5	30.34 +.03	70.5 2.7	35.34 .08	39.3 1.6	52.30 .06	24.9 2.6	25.82 .30	45.5 3.1
19.5	30.35 −.01	73.2 2.6	35.41 .04	40.9 1.5	52.34 +.02	27.5 2.5	25.39 .57	48.5 2.9
29.4	30.31 .06	75.7 2.4	35.43 +.01	42.4 1.4	52.34 −.02	29.9 2.4	24.69 .83	51.4 2.7
July 9.4	30.23 .10	77.9 2.1	35.42 −.03	43.8 1.3	52.29 .07	32.2 2.1	23.74 1.06	53.9 2.4
19.4	30.12 .14	79.9 1.8	35.38 .06	45.1 1.1	52.20 .11	34.2 1.8	22.57 1.27	56.1 2.0
29.4	29.96 .17	81.5 1.4	35.30 .09	46.1 1.0	52.08 .14	35.9 1.5	21.22 1.44	58.0 1.6
Aug. 8.3	29.77 .20	82.8 1.0	35.19 .12	47.0 0.7	51.92 .17	37.2 1.2	19.70 1.59	59.4 1.2
18.3	29.56 .22	83.6 0.6	35.05 .15	47.6 0.5	51.73 .20	38.2 0.8	18.05 1.70	60.3 0.7
28.3	29.32 .24	84.0 +0.2	34.89 .16	48.0 +0.3	51.52 .22	38.8 +0.4	16.31 1.77	60.7 +0.2
Sept. 7.2	29.08 .25	84.0 −0.3	34.72 .17	48.1 0.0	51.30 .23	39.0 0.0	14.52 1.80	60.7 −0.3
17.2	28.83 .24	83.5 0.7	34.54 .17	48.1 −0.2	51.07 .23	38.7 −0.5	12.72 1.80	60.1 0.8
27.2	28.59 .23	82.5 1.2	34.37 .16	47.7 0.5	50.84 .22	38.1 0.9	10.94 1.74	59.1 1.3
Oct. 7.2	28.37 .21	81.1 1.6	34.21 .15	47.1 0.7	50.64 .20	36.9 1.3	9.24 1.65	57.5 1.8
17.1	28.17 .18	79.3 2.0	34.08 .12	46.2 1.0	50.44 .17	35.4 1.7	7.65 1.52	55.5 2.2
27.1	28.01 .13	77.1 2.4	33.98 .08	45.1 1.3	50.29 .13	33.5 2.1	6.22 1.34	53.1 2.6
Nov. 6.1	27.91 .08	74.5 2.8	33.91 −.04	43.7 1.5	50.17 .09	31.2 2.5	4.99 1.12	50.2 3.0
16.1	27.85 −.03	71.5 3.1	33.89 .00	42.1 1.7	50.11 −.04	28.6 2.8	3.99 .87	47.0 3.3
26.0	27.85 +.03	68.4 3.3	33.92 +.05	40.2 2.0	50.10 +.02	25.6 3.0	3.26 .59	43.6 3.5
Dec. 6.0	27.91 .09	65.0 3.4	34.00 .10	38.2 2.1	50.14 .07	22.5 3.2	2.82 −.29	40.0 3.6
16.0	28.03 .15	61.6 3.4	34.12 .15	36.0 2.2	50.24 .13	19.3 3.2	2.68 +.03	36.3 3.7
25.9	28.20 .20	58.1 3.4	34.29 .19	33.7 2.2	50.40 .18	16.1 3.2	2.87 .34	32.7 3.6
35.9	28.43 +.24	54.8 −3.2	34.50 +.22	31.5 −2.2	50.60 +.22	12.9 −3.1	3.36 +.64	29.2 −3.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α^1 Herculis.		44 Ophiuchi.		β Draconis.		α Ophiuchi.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$17^h\ 8^m$	$14^\circ\ 32'$	$17^h\ 18^m$	$24^\circ\ 3'$	$17^h\ 27^m$	$52^\circ\ 23'$	$17^h\ 28^m$	$12^\circ\ 39'$
	s	″	s	″	s	″	s	″
Jan. 0.9	43.75 +.19	22.3 −2.5	27.02 +.23	7.4 +0.3	28.49 +.17	48.6 −3.6	54.55 +.17	22.2 −2.3
10.9	43.96 .23	19.9 2.3	27.26 .26	7.8 0.4	28.69 .24	45.1 3.4	54.74 .21	19.9 2.2
20.9	44.20 .25	17.7 2.2	27.53 .28	8.2 0.5	28.96 .29	41.8 3.1	54.97 .24	17.7 2.1
30.8	44.47 .28	15.6 1.9	27.83 .31	8.7 0.5	29.27 .34	38.9 2.7	55.22 .26	15.7 1.9
Feb. 9.8	44.76 .29	13.9 1.6	28.14 .32	9.3 0.6	29.63 .37	36.5 2.2	55.50 .28	14.0 1.6
19.8	45.05 .30	12.5 1.2	28.47 .33	9.9 0.5	30.02 .40	34.6 1.6	55.78 .29	12.6 1.2
Mar. 1.8	45.35 .30	11.5 0.8	28.80 .33	10.4 0.5	30.42 .41	33.3 1.0	56.08 .29	11.6 0.8
11.7	45.65 .29	10.9 −0.3	29.12 .32	10.9 0.5	30.84 .41	32.6 −0.3	56.37 .29	11.0 −0.4
21.7	45.94 .29	10.8 +0.1	29.45 .32	11.3 0.4	31.25 .40	32.7 +0.3	56.66 .29	10.8 0.0
31.7	46.22 .27	11.1 0.5	29.76 .31	11.7 0.3	31.65 .39	33.3 1.0	56.95 .28	11.0 +0.4
Apr. 10.7	46.48 .26	11.8 0.9	30.06 .29	12.0 0.3	32.02 .36	34.6 1.5	57.22 .27	11.6 0.8
20.6	46.73 .24	12.8 1.2	30.35 .28	12.3 0.2	32.37 .33	36.4 2.0	57.48 .25	12.6 1.1
30.6	46.96 .21	14.2 1.5	30.61 .26	12.5 0.2	32.67 .28	38.7 2.5	57.72 .23	13.9 1.4
May 10.6	47.16 .19	15.8 1.7	30.86 .23	12.7 0.2	32.94 .24	41.3 2.8	57.94 .20	15.4 1.6
20.5	47.33 .16	17.6 1.8	31.07 .20	12.9 0.2	33.15 .18	44.2 3.0	58.13 .18	17.1 1.8
30.5	47.47 .13	19.5 1.9	31.26 .17	13.0 0.2	33.31 .13	47.3 3.1	58.29 .15	18.9 1.8
June 9.5	47.58 .09	21.4 1.9	31.41 .13	13.2 0.2	33.41 .07	50.5 3.1	58.42 .11	20.8 1.9
19.5	47.66 .06	23.2 1.8	31.53 .09	13.4 0.2	33.45 +.02	53.6 3.1	58.52 .08	22.6 1.8
29.4	47.70 +.02	25.0 1.7	31.60 .05	13.7 0.2	33.43 −.05	56.7 2.9	58.58 +.04	24.4 1.7
July 9.4	47.69 −.02	26.7 1.6	31.63 +.01	13.9 0.2	33.35 .11	59.5 2.7	58.59 .00	26.1 1.6
19.4	47.65 .06	28.2 1.4	31.62 −.03	14.2 0.2	33.21 .16	62.1 2.4	58.57 −.04	27.6 1.4
29.4	47.58 .09	29.5 1.2	31.57 .07	14.4 0.2	33.02 .21	64.3 2.1	58.51 .08	28.9 1.2
Aug. 8.3	47.47 .12	30.5 0.9	31.48 .11	14.6 0.2	32.79 .26	66.2 1.7	58.42 .11	30.0 1.0
18.3	47.33 .15	31.3 0.7	31.35 .14	14.8 0.1	32.51 .30	67.7 1.2	58.29 .14	30.9 0.7
28.3	47.17 .17	31.9 0.4	31.20 .16	14.9 +0.1	32.19 .32	68.7 0.8	58.14 .16	31.4 0.5
Sept. 7.2	47.00 .18	32.1 +0.1	31.03 .18	14.9 0.0	31.86 .34	69.2 +0.3	57.97 .18	31.8 +0.2
17.2	46.81 .18	32.1 −0.2	30.85 .18	14.9 −0.1	31.51 .35	69.2 −0.2	57.79 .18	31.8 −0.1
27.2	46.63 .18	31.7 0.5	30.67 .18	14.8 0.1	31.16 .34	68.7 0.7	57.60 .18	31.6 0.4
Oct. 7.2	46.46 .16	31.1 0.8	30.50 .16	14.6 0.2	30.82 .33	67.7 1.3	57.43 .17	31.1 0.7
17.1	46.31 .14	30.1 1.1	30.35 .13	14.4 0.2	30.50 .30	66.2 1.8	57.27 .14	30.3 0.9
27.1	46.19 .10	28.9 1.4	30.23 .10	14.2 0.2	30.22 .26	64.2 2.2	57.14 .11	29.2 1.2
Nov. 6.1	46.11 .06	27.4 1.7	30.16 −.05	14.0 0.2	29.99 .21	61.7 2.6	57.04 .07	27.8 1.5
16.1	46.06 −.02	25.6 1.9	30.13 .00	13.8 0.1	29.81 .15	58.9 3.0	56.99 −.03	26.2 1.7
26.0	46.07 +.03	23.5 2.1	30.15 +.05	13.7 −0.1	29.70 .08	55.7 3.3	56.98 +.01	24.3 2.0
Dec. 6.0	46.13 .08	21.3 2.3	30.23 .10	13.7 0.0	29.65 −.01	52.3 3.5	57.02 .06	22.2 2.2
16.0	46.23 .13	18.9 2.4	30.36 .15	13.8 +0.1	29.68 +.06	48.7 3.6	57.10 .11	20.0 2.3
25.9	46.38 .17	16.4 2.5	30.53 .20	14.0 0.3	29.78 .13	45.0 3.6	57.24 .15	17.7 2.3
35.9	46.58 +.21	14.0 −2.4	30.75 +.24	14.3 +0.4	29.95 +.20	41.4 −3.5	57.41 +.19	15.4 −2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*ω Draconis.		μ Herculis.		*ψ¹ Draconis (*pr.*)		γ Draconis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 17 37	° ′ 68 48	h m 17 41	° ′ 27 47	h m 17 44	° ′ 72 12	h m 17 53	° ′ 51 29
	s	″	s	″	s	″	s	″
Jan. 1.0	39.00 +.17	57.6 −3.7	22.36 +.16	51.8 −3.0	10.22 +.16	38.7 −3.7	34.19 +.13	75.9 −3.6
10.9	39.23 .28	54.0 3.5	22.54 .20	48.9 2.9	10.45 .29	35.1 3.5	34.36 .20	72.3 3.5
20.9	39.57 .39	50.6 3.2	22.76 .23	46.1 2.7	10.81 .42	31.7 3.2	34.58 .25	68.9 3.2
30.9	40.00 .47	47.6 2.8	23.00 .26	43.6 2.4	11.28 .53	28.6 2.8	34.86 .30	65.9 2.8
Feb. 9.8	40.52 .55	45.0 2.3	23.28 .28	41.4 2.0	11.86 .62	26.0 2.3	35.19 .34	63.2 2.4
19.8	41.09 .60	43.0 1.7	23.57 .30	39.7 1.5	12.51 .68	23.9 1.8	35.55 .37	61.1 1.8
Mar. 1.8	41.72 .63	41.6 1.0	23.87 .31	38.4 1.0	13.23 .73	22.4 1.1	35.93 .39	59.6 1.2
11.8	42.36 .64	40.9 −0.4	24.18 .31	37.6 −0.5	13.97 .75	21.6 −0.5	36.33 .40	58.7 −0.6
21.7	43.01 .64	40.9 +0.3	24.49 .31	37.5 +0.1	14.72 .74	21.5 +0.2	36.74 .40	58.4 +0.1
31.7	43.64 .61	41.5 0.9	24.80 .30	37.8 0.6	15.46 .72	22.0 0.8	37.13 .39	58.8 0.7
Apr. 10.7	44.23 .57	42.7 1.5	25.09 .28	38.6 1.1	16.16 .66	23.2 1.5	37.52 .37	59.8 1.3
20.7	44.77 .51	44.6 2.1	25.37 .27	39.9 1.5	16.79 .60	24.9 2.0	37.88 .34	61.4 1.8
30.6	45.24 .43	46.9 2.5	25.62 .24	41.6 1.9	17.35 .51	27.2 2.4	38.21 .31	63.5 2.3
May 10.6	45.63 .35	49.6 2.8	25.85 .22	43.7 2.2	17.81 .41	29.8 2.8	38.50 .27	66.0 2.7
20.6	45.94 .25	52.6 3.1	26.05 .18	45.9 2.4	18.17 .30	32.8 3.1	38.74 .22	68.8 2.9
30.5	46.14 .16	55.8 3.2	26.22 .15	48.4 2.5	18.41 .18	35.9 3.2	38.93 .17	71.8 3.1
June 9.5	46.25 +.05	59.1 3.3	26.35 .11	50.9 2.5	18.53 +.06	39.2 3.3	39.07 .11	75.0 3.2
19.5	46.25 −.05	62.4 3.2	26.45 .07	53.4 2.5	18.53 −.06	42.5 3.2	39.15 +.05	78.2 3.2
29.5	46.15 .15	65.5 3.1	26.50 +.03	55.9 2.4	18.40 .18	45.6 3.1	39.17 −.01	81.4 3.1
July 9.4	45.95 .25	68.5 2.9	26.50 −.01	58.2 2.2	18.16 .30	48.7 2.9	39.13 .07	84.4 2.9
19.4	45.65 .34	71.3 2.6	26.47 .06	60.3 2.0	17.81 .41	51.4 2.6	39.03 .13	87.1 2.6
29.4	45.27 .42	73.7 2.2	26.39 .10	62.2 1.7	17.35 .50	53.9 2.3	38.88 .18	89.6 2.3
Aug. 8.4	44.81 .49	75.8 1.8	26.27 .13	63.8 1.4	16.80 .59	56.0 1.9	38.67 .23	91.7 1.9
18.3	44.29 .55	77.4 1.4	26.12 .16	65.0 1.1	16.17 .66	57.6 1.4	38.42 .27	93.5 1.5
28.3	43.71 .60	78.5 0.9	25.94 .19	65.9 0.7	15.47 .72	58.9 1.0	38.13 .31	94.8 1.1
Sept. 7.3	43.09 .63	79.1 +0.4	25.74 .21	66.5 +0.3	14.73 .76	59.6 +0.5	37.80 .33	95.7 0.6
17.2	42.45 .64	79.3 −0.1	25.53 .22	66.6 0.0	13.96 .77	59.8 −0.1	37.46 .34	96.0 +0.1
27.2	41.80 .64	78.9 0.7	25.31 .21	66.4 −0.4	13.19 .77	59.5 0.6	37.12 .34	95.9 −0.4
Oct. 7.2	41.17 .61	77.9 1.2	25.10 .20	65.7 0.8	12.42 .75	58.6 1.1	36.78 .33	95.2 0.9
17.2	40.57 .57	76.5 1.7	24.91 .18	64.7 1.2	11.69 .70	57.2 1.6	36.45 .31	94.1 1.4
27.1	40.02 .52	74.5 2.2	24.74 .15	63.2 1.6	11.01 .64	55.4 2.1	36.16 .27	92.4 1.9
Nov. 6.1	39.54 .44	72.1 2.6	24.60 .11	61.4 2.0	10.41 .55	53.0 2.6	35.91 .23	90.3 2.4
16.1	39.14 .35	69.3 3.0	24.51 .07	59.3 2.3	9.90 .45	50.3 3.0	35.70 .17	87.7 2.8
26.1	38.84 .25	66.1 3.3	24.46 −.02	56.8 2.6	9.51 .33	47.1 3.3	35.56 .11	84.7 3.1
Dec. 6.0	38.65 .13	62.6 3.6	24.47 +.03	54.1 2.8	9.23 .20	43.7 3.5	35.48 −.04	81.5 3.4
16.0	38.57 −.02	58.9 3.7	24.52 .08	51.2 2.9	9.10 −.07	40.0 3.7	35.47 +.02	78.0 3.5
26.0	38.61 +.10	55.2 3.7	24.63 .13	48.3 3.0	9.10 +.07	36.3 3.7	35.53 .09	74.4 3.6
35.9	38.77 +.22	51.5 −3.6	24.78 +.17	45.3 −3.0	9.25 +.20	32.6 −3.6	35.65 +.15	70.8 −3.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ^2 Sagittarii.		μ^1 Sagittarii.		*σ Octantis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 17 57	° ′ 30 25	h m 18 6	° ′ 21 5	h 18	° ′ 89 16
	s	″	s	″	m s	″
Jan. 1.0	28.50 +.19	19.3 −0.2	0.31 +.17	21.6 +0.3	5 45.38 + 7.05	37.6 −3.1
10.9	28.72 .23	19.1 0.2	0.50 .21	21.9 0.3	5 54.03 10.17	34.6 2.9
20.9	28.97 .27	19.0 −0.1	0.73 .24	22.3 0.4	6 5.63 12.94	31.8 2.6
30.9	29.25 .29	18.9 0.0	0.98 .27	22.6 0.3	6 19.79 15.33	29.3 2.3
Feb. 9.9	29.56 .32	18.9 0.0	1.26 .29	23.0 0.3	6 36.14 17.26	27.2 1.9
19.8	29.88 .33	19.0 +0.1	1.55 .30	23.3 0.3	6 54.21 18.77	25.5 1.4
Mar. 1.8	30.22 .34	19.0 0.1	1.86 .31	23.5 0.2	7 13.55 19.82	24.3 1.0
11.8	30.56 .34	19.1 0.1	2.18 .32	23.7 +0.1	7 33.70 20.40	23.6 −0.5
21.7	30.91 .34	19.3 0.1	2.50 .32	23.8 0.0	7 54.20 20.47	23.3 0.0
31.7	31.25 .34	19.4 0.1	2.81 .31	23.8 −0.1	8 14.60 20.24	23.6 +0.5
Apr. 10.7	31.58 .33	19.5 0.1	3.12 .31	23.6 0.1	8 34.54 19.56	24.3 1.0
20.7	31.91 .32	19.7 0.2	3.43 .30	23.5 0.2	8 53.58 18.44	25.6 1.4
30.6	32.21 .30	19.8 0.2	3.72 .28	23.3 0.2	9 11.30 16.98	27.2 1.8
May 10.6	32.50 .28	20.1 0.2	3.99 .26	23.0 0.2	9 27.42 15.18	29.2 2.2
20.6	32.77 .25	20.3 0.3	4.24 .24	22.8 0.2	9 41.54 13.03	31.6 2.5
30.6	33.00 .22	20.7 0.4	4.47 .21	22.6 0.2	9 53.38 10.60	34.3 2.8
June 9.5	33.20 .18	21.1 0.4	4.66 .18	22.4 0.1	10 2.67 7.93	37.2 3.0
19.5	33.36 .14	21.6 0.5	4.82 .14	22.3 −0.1	10 9.19 5.10	40.3 3.1
29.5	33.48 .09	22.1 0.6	4.94 .10	22.2 0.0	10 12.83 + 2.12	43.5 3.2
July 9.4	33.55 +.05	22.7 0.6	5.02 .05	22.3 0.0	10 13.39 − 0.94	46.6 3.1
19.4	33.58 .00	23.3 0.6	5.05 +.01	22.3 +0.1	10 10.94 3.97	49.7 3.0
29.4	33.56 −.04	23.9 0.6	5.04 −.03	22.5 0.1	10 5.48 6.88	52.6 2.8
Aug. 8.4	33.49 .09	24.4 0.5	4.98 .07	22.6 0.2	9 57.26 9.55	55.3 2.5
18.3	33.38 .13	24.9 0.5	4.89 .11	22.8 0.2	9 46.47 11.92	57.6 2.1
28.3	33.24 .16	25.4 0.4	4.76 .14	23.0 0.2	9 33.55 13.87	59.4 1.6
Sept. 7.3	33.07 .18	25.7 0.3	4.60 .16	23.2 0.2	9 18.88 15.36	60.8 1.1
17.3	32.88 .19	25.9 +0.1	4.43 .18	23.3 0.1	9 3.03 16.24	61.6 +0.5
27.2	32.68 .19	26.0 0.0	4.25 .18	23.4 +0.1	8 46.60 16.50	61.9 −0.1
Oct. 7.2	32.49 .18	26.0 −0.1	4.07 .17	23.5 0.0	8 30.25 16.10	61.5 0.7
17.2	32.31 .16	25.8 0.2	3.91 .15	23.5 0.0	8 14.62 15.03	60.5 1.2
27.1	32.17 .13	25.5 0.3	3.77 .12	23.5 0.0	8 0.40 13.33	59.0 1.8
Nov. 6.1	32.05 .09	25.1 0.4	3.66 .09	23.5 0.0	7 48.15 11.07	57.0 2.3
16.1	31.99 −.04	24.7 0.4	3.60 −.04	23.6 0.0	7 38.42 8.31	54.5 2.7
26.1	31.97 +.01	24.2 0.5	3.57 .00	23.6 +0.1	7 31.64 5.19	51.6 3.0
Dec. 6.0	32.01 .06	23.8 0.4	3.60 +.05	23.7 0.1	7 28.12 − 1.84	48.6 3.1
16.0	32.10 .12	23.4 0.4	3.63 .10	23.8 0.2	7 27.98 + 1.59	45.3 3.2
26.0	32.25 .17	23.0 0.3	3.80 .15	24.0 0.2	7 31.30 5.02	42.1 3.2
36.0	32.44 +.21	22.7 −0.2	3.97 +.19	24.3 +0.3	7 37.97 + 8.26	39.0 −3.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Serpentis.		1 Aquilæ.		α Lyræ. (*Vega.*)		β Lyræ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 18 14	° ′ 2 55	h m 18 28	° ′ 8 19	h m 18 32	° ′ 38 39	h m 18 45	° ′ 33 12
	s	″	s	″	s	″	s	″
Jan. 1.0	35.66 +.14	46.8 +1.4	8.72 +.13	54.1 +1.0	31.86 +.09	53.6 −3.2	16.69 +.08	51.7 −3.0
10.9	35.83 .18	48.2 1.4	8.88 .17	55.1 1.0	31.97 .14	50.4 3.2	16.80 .13	48.6 3.0
20.9	36.02 .21	49.6 1.3	9.07 .20	56.1 1.0	32.14 .19	47.2 3.0	16.94 .17	45.7 2.9
30.9	36.25 .24	50.9 1.2	9.29 .23	57.0 0.9	32.34 .23	44.3 2.8	17.13 .21	42.9 2.6
Feb. 9.9	36.49 .26	52.0 1.0	9.53 .25	57.8 0.8	32.59 .26	41.7 2.4	17.36 .24	40.4 2.3
19.8	36.76 .27	52.9 0.8	9.79 .27	58.5 0.6	32.87 .29	39.5 1.9	17.62 .27	38.3 1.9
Mar. 1.8	37.04 .28	53.6 0.6	10.07 .28	59.0 0.4	33.17 .31	37.8 1.4	17.90 .29	36.6 1.4
11.8	37.33 .29	54.1 +0.3	10.36 .29	59.3 +0.2	33.49 .33	36.7 0.8	18.20 .31	35.5 0.9
21.8	37.62 .29	54.2 0.0	10.66 .30	59.3 0.0	33.82 .33	36.1 −0.2	18.51 .32	34.9 −0.3
31.7	37.91 .29	54.1 −0.2	10.95 .30	59.2 −0.3	34.16 .34	36.2 +0.3	18.83 .32	34.8 +0.3
Apr. 10.7	38.20 .28	53.8 0.5	11.25 .29	58.8 0.5	34.50 .33	36.8 0.9	19.15 .32	35.4 0.8
20.7	38.48 .28	53.1 0.7	11.54 .29	58.3 0.6	34.82 .32	38.0 1.4	19.46 .31	36.4 1.3
30.6	38.75 .26	52.3 0.9	11.82 .27	57.5 0.8	35.13 .30	39.7 1.9	19.77 .29	38.0 1.8
May 10.6	39.00 .24	51.4 1.0	12.09 .26	56.7 0.9	35.42 .27	41.8 2.3	20.05 .27	40.0 2.1
20.6	39.23 .22	50.2 1.1	12.34 .24	55.8 0.9	35.68 .24	44.3 2.6	20.31 .24	42.3 2.4
30.6	39.44 .19	49.1 1.2	12.57 .21	54.8 1.0	35.90 .20	47.0 2.8	20.54 .21	44.8 2.7
June 9.5	39.62 .16	47.9 1.2	12.76 .18	53.9 0.9	36.08 .16	49.9 2.9	20.73 .18	47.6 2.8
19.5	39.77 .13	46.7 1.1	12.93 .15	52.9 0.9	36.22 .12	52.9 3.0	20.89 .13	50.4 2.8
29.5	39.88 .09	45.6 1.1	13.06 .11	52.1 0.8	36.32 .07	55.9 3.0	21.00 .09	53.3 2.8
July 9.5	39.95 .05	44.6 1.0	13.14 .07	51.3 0.7	36.36 +.02	58.8 2.8	21.07 +.04	56.1 2.7
19.4	39.98 +.01	43.7 0.8	13.19 +.02	50.7 0.6	36.35 −.03	61.6 2.7	21.08 −.01	58.7 2.6
29.4	39.97 −.03	42.9 0.7	13.19 −.02	50.1 0.5	36.29 .08	64.1 2.4	21.05 .05	61.2 2.3
Aug. 8.4	39.92 .07	42.3 0.6	13.16 .06	49.7 0.4	36.19 .13	66.4 2.1	20.97 .10	63.4 2.1
18.3	39.83 .11	41.8 0.4	13.08 .09	49.4 0.3	36.03 .17	68.3 1.8	20.85 .14	65.3 1.7
28.3	39.71 .13	41.4 0.3	12.97 .13	49.2 −0.1	35.84 .20	69.9 1.4	20.69 .18	66.9 1.4
Sept. 7.3	39.56 .16	41.2 −0.1	12.83 .15	49.1 0.0	35.63 .23	71.1 1.0	20.50 .20	68.1 1.0
17.3	39.39 .17	41.1 0.0	12.67 .16	49.1 0.0	35.38 .25	71.9 0.5	20.28 .22	68.9 0.6
27.2	39.22 .17	41.2 +0.2	12.50 .17	49.2 +0.1	35.13 .26	72.2 +0.1	20.05 .23	69.3 +0.2
Oct. 7.2	39.05 .17	41.4 0.3	12.32 .17	49.4 0.2	34.87 .25	72.0 −0.4	19.81 .23	69.2 −0.3
17.2	38.89 .15	41.8 0.4	12.16 .15	49.7 0.3	34.62 .24	71.4 0.8	19.58 .22	68.7 0.7
27.2	38.75 .13	42.3 0.6	12.02 .13	50.0 0.4	34.38 .22	70.3 1.3	19.37 .20	67.8 1.1
Nov. 6.1	38.63 .09	43.0 0.7	11.90 .10	50.5 0.5	34.18 .19	68.8 1.8	19.18 .17	66.4 1.6
16.1	38.56 .05	43.8 0.9	11.82 .06	51.1 0.6	34.01 .15	66.8 2.2	19.02 .14	64.7 1.9
26.1	38.52 −.01	44.8 1.0	11.78 −.02	51.8 0.7	33.89 .10	64.4 2.5	18.91 .09	62.6 2.3
Dec. 6.0	38.53 +.03	45.9 1.2	11.78 +.02	52.6 0.8	33.81 −.05	61.7 2.8	18.84 −.05	60.1 2.6
16.0	38.59 .08	47.2 1.3	11.83 .07	53.4 0.9	33.79 +.01	58.8 3.1	18.81 .00	57.4 2.8
26.0	38.69 .12	48.5 1.3	11.92 .11	54.4 1.0	33.82 .06	55.6 3.2	18.84 +.05	54.4 3.0
36.0	38.83 +.16	49.9 +1.4	12.05 +.15	55.4 +1.0	33.91 +.11	52.4 −3.2	18.92 +.10	51.4 −3.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	σ Sagittarii.		*50 Draconis.		ζ Aquilæ.		d Sagittarii.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 18 47	° ′ 26 27	h m 18 50	° ′ 75 16	h m 18 59	° ′ 13 40	h m 19 10	° ′ 19 10
	s	″	s	″	s	″	s	″
Jan. 1.0	13.19 +.14	15.1 −0.2	26.60 −.09	49.8 −3.6	26.50 +.08	25.0 −2.1	2.56 +.10	47.3 +0.2
11.0	13.35 .18	14.9 0.2	26.60 +.08	46.2 3.6	26.60 .12	22.9 2.1	2.68 .14	47.5 0.2
20.9	13.54 .21	14.7 0.2	26.76 .24	42.6 3.5	26.75 .16	20.8 2.0	2.84 .18	47.6 0.1
30.9	13.77 .24	14.5 0.2	27.08 .40	39.2 3.2	26.92 .19	18.8 1.9	3.04 .21	47.8 +0.1
Feb. 9.9	14.03 .27	14.3 0.2	27.55 .54	36.1 2.9	27.13 .22	17.1 1.6	3.26 .24	47.8 0.0
19.9	14.31 .29	14.1 0.2	28.15 .66	33.4 2.4	27.36 .24	15.6 1.3	3.51 .26	47.8 −0.1
Mar. 1.8	14.61 .31	13.9 0.2	28.86 .75	31.2 1.9	27.61 .26	14.4 1.0	3.78 .28	47.7 0.2
11.8	14.93 .32	13.7 0.3	29.66 .82	29.6 1.3	27.88 .27	13.6 0.6	4.07 .29	47.5 0.3
21.8	15.25 .33	13.4 0.3	30.51 .86	28.6 −0.7	28.16 .28	13.3 −0.1	4.37 .30	47.1 0.4
31.8	15.58 .33	13.0 0.3	31.39 .88	28.3 0.0	28.45 .29	13.4 +0.3	4.67 .31	46.7 0.5
Apr. 10.7	15.91 .33	12.7 0.4	32.26 .86	28.6 +0.7	28.74 .29	13.9 0.7	4.99 .32	46.1 0.6
20.7	16.24 .33	12.3 0.4	33.10 .81	29.6 1.3	29.03 .29	14.8 1.1	5.31 .31	45.5 0.7
30.7	16.56 .32	12.0 0.3	33.89 .74	31.2 1.8	29.32 .28	16.0 1.4	5.62 .31	44.8 0.7
May 10.6	16.87 .30	11.6 0.3	34.59 .65	33.2 2.3	29.59 .27	17.5 1.7	5.92 .30	44.1 0.7
20.6	17.16 .28	11.4 0.2	35.19 .54	35.7 2.7	29.85 .25	19.3 1.9	6.21 .28	43.4 0.7
30.6	17.43 .25	11.2 −0.1	35.67 .41	38.6 3.0	30.09 .22	21.3 2.0	6.48 .26	42.7 0.6
June 9.6	17.67 .22	11.1 0.0	36.01 .27	41.7 3.2	30.30 .19	23.4 2.1	6.73 .23	42.1 0.5
19.5	17.88 .18	11.1 +0.1	36.21 +.13	45.0 3.3	30.47 .16	25.5 2.1	6.94 .20	41.6 0.4
29.5	18.04 .14	11.3 0.2	36.27 −.02	48.4 3.3	30.61 .12	27.6 2.1	7.12 .16	41.2 0.3
July 9.5	18.16 .10	11.5 0.3	36.18 .16	51.7 3.3	30.71 .08	29.6 2.0	7.26 .11	41.0 0.2
19.5	18.24 +.05	11.8 0.4	35.94 .31	55.0 3.2	30.76 +.03	31.5 1.8	7.35 .07	40.8 −0.1
29.4	18.26 .00	12.2 0.4	35.57 .44	58.1 2.9	30.77 −.01	33.3 1.6	7.39 +.02	40.8 0.0
Aug. 8.4	18.24 −.04	12.7 0.5	35.06 .57	60.9 2.7	30.74 .05	34.8 1.4	7.39 −.02	40.9 +0.1
18.4	18.18 .09	13.2 0.5	34.43 .68	63.4 2.3	30.67 .09	36.2 1.2	7.35 .06	41.0 0.2
28.3	18.07 .12	13.7 0.5	33.70 .78	65.5 1.9	30.56 .12	37.2 0.9	7.26 .10	41.3 0.3
Sept. 7.3	17.93 .15	14.1 0.4	32.88 .85	67.2 1.5	30.42 .15	38.0 0.7	7.14 .14	41.5 0.3
17.3	17.76 .17	14.5 0.4	32.00 .91	68.5 1.0	30.26 .17	38.6 0.4	6.99 .16	41.8 0.3
27.3	17.58 .18	14.8 0.3	31.06 .94	69.3 +0.5	30.08 .18	38.8 +0.1	6.83 .17	42.1 0.3
Oct. 7.2	17.39 .18	15.1 0.2	30.11 .95	69.5 0.0	29.90 .18	38.8 −0.2	6.65 .17	42.4 0.3
17.2	17.21 .17	15.2 +0.1	29.16 .94	69.2 −0.6	29.71 .18	38.4 0.5	6.48 .17	42.7 0.3
27.2	17.05 .15	15.2 0.0	28.24 .90	68.4 1.1	29.55 .16	37.8 0.8	6.32 .15	43.0 0.2
Nov. 6.2	16.91 .12	15.2 −0.1	27.37 .83	67.0 1.6	29.40 .13	36.8 1.1	6.18 .12	43.2 0.2
16.1	16.81 .08	15.1 0.2	26.58 .74	65.1 2.1	29.28 .10	35.6 1.3	6.07 .09	43.4 0.2
26.1	16.75 −.03	14.9 0.2	25.88 .63	62.8 2.6	29.20 .06	34.1 1.6	6.00 .05	43.5 0.2
Dec. 6.1	16.74 +.01	14.7 0.2	25.32 .50	60.0 3.0	29.16 −.02	32.4 1.8	5.97 −.01	43.7 0.2
16.0	16.78 .06	14.4 0.2	24.89 .35	56.8 3.3	29.15 +.02	30.5 2.0	5.98 +.04	43.9 0.2
26.0	16.87 .11	14.2 0.2	24.61 .19	53.4 3.5	29.20 .06	28.5 2.1	6.04 .08	44.1 0.2
36.0	17.00 +.15	14.0 −0.2	24.50 −.03	49.9 −3.6	29.28 +.10	26.4 −2.1	6.15 +.12	44.2 +0.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*δ Draconis.		*τ Draconis.		δ Aquilæ.		κ Aquilæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 19 12	° ′ 67 25	h m 19 17	° ′ 73 6	h m 19 18	° ′ 2 51	h m 19 29	° ′ 7 18
	s	″	s	″	s	″	s	″
Jan. 1.0	27.73 −.07	66.1 −3.5	57.03 −.15	56.7 −3.5	57.26 +.08	33.8 −1.5	54.60 +.07	44.7 +0.8
11.0	27.71 +.04	62.5 3.6	56.95 −.01	53.1 3.6	57.36 .11	32.3 1.5	54.69 .11	45.5 0.8
21.0	27.80 .14	58.9 3.5	57.01 +.13	49.6 3.5	57.49 .15	30.8 1.4	54.82 .15	46.4 0.8
30.9	28.00 .24	55.4 3.3	57.22 .27	46.1 3.4	57.65 .18	29.5 1.3	54.98 .18	47.1 0.7
Feb. 9.9	28.29 .34	52.2 3.0	57.56 .40	42.8 3.1	57.85 .21	28.3 1.1	55.17 .20	47.7 0.6
19.9	28.68 .42	49.4 2.6	58.02 .52	39.9 2.7	58.06 .23	27.2 0.9	55.39 .23	48.2 0.4
Mar. 1.9	29.14 .49	47.0 2.1	58.59 .61	37.5 2.2	58.30 .25	26.5 0.6	55.63 .25	48.5 +0.2
11.8	29.66 .54	45.1 1.5	59.24 .69	35.6 1.6	58.56 .27	26.1 −0.3	55.89 .27	48.6 0.0
21.8	30.23 .58	43.9 0.9	59.96 .74	34.2 1.0	58.84 .28	25.9 0.0	56.17 .28	48.4 −0.3
31.8	30.83 .60	43.4 −0.2	60.72 .77	33.6 −0.3	59.12 .29	26.1 +0.4	56.45 .29	48.0 0.5
Apr. 10.8	31.42 .60	43.5 +0.4	61.49 .77	33.6 +0.3	59.41 .29	26.6 0.7	56.75 .30	47.4 0.7
20.7	32.02 .58	44.3 1.1	62.26 .75	34.2 0.9	59.71 .29	27.5 1.0	57.05 .30	46.6 0.9
30.7	32.59 .55	45.6 1.6	62.98 .70	35.5 1.5	60.00 .29	28.6 1.2	57.35 .30	45.6 1.0
May 10.7	33.11 .50	47.5 2.1	63.66 .63	37.3 2.1	60.28 .28	29.9 1.4	57.64 .29	44.5 1.2
20.6	33.58 .43	49.9 2.6	64.25 .55	39.6 2.5	60.55 .26	31.4 1.5	57.92 .28	43.3 1.2
30.6	33.98 .36	52.7 2.9	64.75 .45	42.3 2.9	60.81 .24	33.0 1.6	58.19 .26	42.1 1.3
June 9.6	34.30 .27	55.8 3.2	65.15 .34	45.3 3.1	61.03 .21	34.6 1.7	58.44 .23	40.8 1.2
19.6	34.52 .18	59.1 3.4	65.42 .21	48.6 3.3	61.23 .18	36.3 1.7	58.65 .20	39.6 1.2
29.5	34.66 +.08	62.5 3.4	65.57 +.09	52.0 3.4	61.40 .14	38.0 1.6	58.83 .16	38.5 1.1
July 9.5	34.69 −.01	66.0 3.4	65.60 −.04	55.4 3.4	61.52 .10	39.5 1.5	58.98 .12	37.4 1.0
19.5	34.63 .11	69.4 3.3	65.49 .17	58.8 3.3	61.60 .06	40.9 1.4	59.08 .08	36.5 0.8
29.5	34.46 .21	72.6 3.1	65.25 .30	62.1 3.2	61.64 +.02	42.2 1.2	59.13 +.03	35.8 0.7
Aug. 8.4	34.21 .30	75.6 2.9	64.89 .41	65.2 2.9	61.64 −.02	43.3 1.0	59.15 −.01	35.2 0.5
18.4	33.86 .38	78.3 2.6	64.43 .52	68.0 2.6	61.59 .06	44.3 0.8	59.12 .05	34.7 0.4
28.4	33.44 .45	80.7 2.2	63.86 .61	70.4 2.3	61.51 .10	45.0 0.6	59.05 .09	34.4 0.2
Sept. 7.3	32.96 .51	82.7 1.8	63.20 .69	72.5 1.9	61.40 .13	45.5 0.4	58.94 .12	34.3 −0.1
17.3	32.42 .56	84.3 1.3	62.47 .75	74.2 1.4	61.25 .15	45.8 +0.2	58.80 .14	34.3 0.0
27.3	31.84 .59	85.3 0.8	61.69 .80	75.4 0.9	61.09 .16	45.9 0.0	58.65 .16	34.4 +0.1
Oct. 7.3	31.24 .60	85.9 +0.3	60.88 .82	76.1 +0.4	60.92 .17	45.9 −0.2	58.49 .17	34.6 0.3
17.2	30.64 .60	85.9 −0.3	60.06 .82	76.2 −0.1	60.75 .16	45.6 0.4	58.32 .16	34.9 0.3
27.2	30.05 .58	85.4 0.8	59.25 .79	75.8 0.7	60.59 .15	45.1 0.6	58.16 .15	35.3 0.4
Nov. 6.2	29.49 .54	84.3 1.3	58.47 .75	74.9 1.2	60.45 .13	44.4 0.8	58.02 .13	35.7 0.5
16.2	28.97 .48	82.7 1.9	57.75 .68	73.4 1.8	60.34 .10	43.6 0.9	57.91 .10	36.3 0.6
26.1	28.52 .41	80.5 2.4	57.10 .60	71.3 2.3	60.26 .06	42.6 1.1	57.82 .06	37.0 0.7
Dec. 6.1	28.14 .31	77.9 2.8	56.56 .49	68.8 2.7	60.21 −.02	41.4 1.3	57.78 −.03	37.7 0.8
16.1	27.86 .24	74.9 3.1	56.12 .37	65.9 3.1	60.21 +.02	40.1 1.4	57.77 +.01	38.5 0.8
26.0	27.67 .13	71.6 3.4	55.81 .24	62.7 3.3	60.24 .06	38.7 1.4	57.81 .05	39.3 0.8
36.0	27.59 −.03	68.1 −3.6	55.64 −.10	59.3 −3.5	60.32 +.09	37.2 −1.5	57.88 +.09	40.1 +0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Aquilæ.		α Aquilæ. (*Altair.*)		*ε Draconis.		β Aquilæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 19 40	° ′ 10 17	h m 19 44	° ′ 8 31	h m 19 48	° ′ 69 55	h m 19 48	° ′ 6 5
	s	″	s	″	s	″	s	″
Jan. 1.0	5.33 +.05	61.5 −1.8	27.05 +.05	44.8 −1.7	32.23 −.18	84.3 −3.3	56.30 +.04	9.5 −1.6
11.0	5.40 .09	59.7 1.8	27.12 .09	43.1 1.7	32.09 −.07	80.9 3.5	56.36 .08	7.9 1.6
21.0	5.50 .12	57.9 1.8	27.23 .12	41.4 1.6	32.08 +.05	77.3 3.5	56.46 .12	6.4 1.5
31.0	5.64 .15	56.2 1.6	27.36 .15	39.8 1.5	32.19 .16	73.8 3.4	56.60 .15	4.9 1.4
Feb. 9.9	5.81 .18	54.6 1.4	27.53 .18	38.4 1.3	32.41 .28	70.5 3.2	56.76 .18	3.5 1.2
19.9	6.01 .21	53.3 1.2	27.73 .21	37.1 1.1	32.74 .38	67.4 2.9	56.95 .20	2.4 1.0
Mar. 1.9	6.23 .23	52.2 0.9	27.95 .23	36.2 0.8	33.17 .47	64.7 2.4	57.17 .23	1.6 0.7
11.9	6.48 .25	51.5 0.5	28.19 .25	35.6 0.4	33.68 .55	62.5 1.9	57.41 .25	1.0 −0.4
21.8	6.74 .27	51.2 −0.1	28.45 .27	35.3 −0.1	34.26 .60	60.9 1.3	57.67 .27	0.8 0.0
31.8	7.02 .28	51.3 +0.3	28.73 .28	35.4 +0.3	34.89 .64	59.9 −0.7	57.94 .28	0.9 +0.3
Apr. 10.8	7.31 .29	51.7 0.6	29.02 .29	35.9 0.7	35.55 .66	59.5 0.0	58.23 .29	1.4 0.7
20.7	7.60 .29	52.6 1.0	29.31 .29	36.7 1.0	36.21 .66	59.8 +0.6	58.52 .29	2.2 1.0
30.7	7.89 .29	53.7 1.3	29.61 .29	37.9 1.3	36.87 .64	60.7 1.2	58.82 .29	3.4 1.3
May 10.7	8.18 .28	55.2 1.6	29.90 .29	39.3 1.6	37.49 .59	62.2 1.8	59.11 .29	4.8 1.5
20.7	8.46 .27	56.9 1.8	30.18 .28	41.0 1.7	38.06 .54	64.3 2.3	59.39 .28	6.4 1.7
30.6	8.73 .25	58.8 1.9	30.45 .26	42.8 1.9	38.56 .46	66.8 2.7	59.66 .26	8.1 1.8
June 9.6	8.97 .23	60.8 2.0	30.70 .23	44.8 2.0	38.98 .38	69.6 3.0	59.91 .23	9.9 1.9
19.6	9.18 .19	62.8 2.0	30.91 .20	46.8 2.0	39.31 .28	72.8 3.3	60.13 .20	11.8 1.9
29.6	9.36 .16	64.8 2.0	31.09 .16	48.8 2.0	39.54 .17	76.2 3.4	60.32 .17	13.7 1.8
July 9.5	9.49 .12	66.8 1.9	31.24 .12	50.7 1.9	39.66 +.06	79.7 3.5	60.47 .13	15.5 1.7
19.5	9.59 .07	68.7 1.8	31.34 .08	52.5 1.7	39.66 −.05	83.1 3.5	60.57 .09	17.1 1.6
29.5	9.64 +.03	70.5 1.6	31.40 +.04	54.2 1.6	39.56 .15	86.6 3.4	60.64 +.04	18.7 1.4
Aug. 8.4	9.65 −.01	72.0 1.4	31.41 −.01	55.7 1.4	39.36 .26	89.9 3.2	60.66 .00	20.0 1.2
18.4	9.61 .05	73.3 1.2	31.39 .05	56.9 1.2	39.05 .36	93.0 2.9	60.64 −.04	21.2 1.0
28.4	9.54 .09	74.4 1.0	31.32 .09	58.0 0.9	38.65 .44	95.7 2.6	60.57 .08	22.1 0.8
Sept. 7.4	9.43 .12	75.3 0.7	31.21 .12	58.8 0.7	38.16 .52	98.2 2.3	60.47 .11	22.8 0.6
17.3	9.29 .15	75.9 0.5	31.08 .14	59.4 0.5	37.61 .58	100.3 1.8	60.34 .14	23.3 0.4
27.3	9.13 .16	76.3 +0.2	30.92 .16	59.8 +0.2	37.00 .63	101.9 1.4	60.19 .16	23.6 +0.2
Oct. 7.3	8.96 .17	76.4 0.0	30.76 .17	59.9 0.0	36.35 .66	103.0 0.9	60.03 .17	23.6 −0.1
17.3	8.79 .17	76.2 −0.3	30.59 .17	59.7 −0.3	35.68 .67	103.6 +0.3	59.86 .17	23.5 0.3
27.2	8.62 .16	75.8 0.6	30.42 .16	59.3 0.5	35.00 .66	103.7 −0.2	59.69 .16	23.0 0.5
Nov. 6.2	8.46 .14	75.1 0.8	30.27 .14	58.7 0.8	34.35 .64	103.2 0.8	59.54 .14	22.4 0.7
16.2	8.33 .12	74.2 1.1	30.14 .11	57.8 1.0	33.72 .59	102.1 1.3	59.41 .11	21.6 0.9
26.1	8.23 .08	73.0 1.3	30.04 .08	56.7 1.2	33.16 .53	100.5 1.9	59.31 .08	20.5 1.1
Dec. 6.1	8.17 .05	71.6 1.5	29.97 .05	55.4 1.4	32.66 .45	98.3 2.4	59.25 .05	19.3 1.3
16.1	8.14 −.01	70.1 1.6	29.94 −.01	53.9 1.5	32.25 .36	95.7 2.8	59.21 −.01	18.0 1.4
26.1	8.14 +.03	68.3 1.8	29.95 +.03	52.3 1.6	31.93 .26	92.7 3.1	59.22 +.02	16.5 1.5
36.0	8.19 +.07	66.5 −1.8	30.00 +.07	50.6 −1.7	31.73 −.14	89.4 −3.4	59.26 +.06	14.9 −1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	τ Aquilæ.		α² Capricorni.		*κ Cephei.		α Pavonis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	19h 57m	6° 54′	20h 10m	12° 56′	20h 13m	77° 18′	20h 15m	57° 8′
	s	″	s	″	s	″	s	″
Jan. 1.0	48.02 +.04	55.2 −1.6	51.31 +.04	38.3 +0.4	6.47 −.46	82.7 −3.1	22.00 +.03	52.2 −2.1
11.0	48.08 .07	53.6 1.6	51.37 .08	38.7 0.4	6.10 .28	79.5 3.3	22.06 .10	50.0 2.2
21.0	48.17 .11	52.0 1.5	51.46 .11	39.0 0.3	5.90 −.10	76.1 3.4	22.20 .16	47.7 2.3
31.0	48.29 .14	50.5 1.4	51.59 .14	39.3 0.2	5.90 +.09	72.6 3.4	22.39 .22	45.3 2.3
Feb. 9.9	48.45 .17	49.2 1.2	51.75 .17	39.4 +0.1	6.09 .28	69.2 3.3	22.64 .28	43.0 2.3
19.9	48.63 .20	48.0 1.0	51.93 .20	39.5 −0.1	6.46 .45	66.0 3.0	22.96 .34	40.7 2.2
Mar. 1.9	48.84 .22	47.1 0.7	52.15 .23	39.3 0.2	7.00 .61	63.1 2.7	23.32 .38	38.5 2.1
11.9	49.07 .24	46.6 0.4	52.38 .25	39.0 0.4	7.69 .75	60.6 2.2	23.72 .42	36.5 1.9
21.8	49.33 .26	46.3 −0.1	52.64 .27	38.5 0.6	8.50 .86	58.7 1.7	24.16 .46	34.6 1.7
31.8	49.60 .28	46.5 +0.3	52.92 .28	37.9 0.8	9.40 .93	57.3 1.1	24.63 .48	33.0 1.5
Apr. 10.8	49.88 .29	47.0 0.7	53.21 .30	37.0 0.9	10.37 .98	56.6 −0.4	25.13 .51	31.6 1.2
20.7	50.17 .29	47.8 1.0	53.51 .31	36.0 1.1	11.36 .99	56.5 +0.2	25.65 .52	30.5 0.9
30.7	50.47 .30	48.9 1.3	53.82 .31	34.9 1.2	12.35 .97	57.0 0.8	26.17 .52	29.7 0.6
May 10.7	50.77 .29	50.4 1.5	54.14 .31	33.7 1.2	13.31 .92	58.1 1.4	26.70 .52	29.2 −0.3
20.7	51.05 .28	52.0 1.7	54.44 .30	32.5 1.2	14.19 .84	59.8 1.9	27.21 .50	29.1 0.0
30.6	51.33 .26	53.8 1.8	54.74 .29	31.2 1.2	14.98 .73	62.0 2.4	27.70 .48	29.3 +0.4
June 9.6	51.58 .24	55.7 1.9	55.02 .26	30.1 1.2	15.65 .60	64.6 2.8	28.17 .44	29.9 0.7
19.6	51.81 .21	57.6 1.9	55.27 .24	28.9 1.0	16.19 .46	67.6 3.1	28.59 .39	30.8 1.1
29.6	52.00 .18	59.5 1.9	55.49 .20	28.0 0.9	16.57 .30	70.8 3.3	28.95 .34	32.0 1.4
July 9.5	52.16 .14	61.4 1.8	55.67 .16	27.1 0.8	16.80 +.14	74.2 3.5	29.26 .27	33.5 1.6
19.5	52.27 .09	63.2 1.7	55.82 .12	26.4 0.6	16.86 −.03	77.7 3.5	29.49 .20	35.3 1.8
29.5	52.35 .05	64.8 1.5	55.91 .08	25.9 0.4	16.74 .19	81.2 3.5	29.65 .12	37.2 2.0
Aug. 8.4	52.37 +.01	66.2 1.3	55.97 +.03	25.5 0.3	16.47 .35	84.7 3.4	29.74 +.04	39.2 2.1
18.4	52.36 −.04	67.5 1.1	55.98 −.01	25.3 −0.1	16.03 .51	87.9 3.2	29.74 −.04	41.3 2.1
28.4	52.30 .08	68.5 0.9	55.94 .06	25.3 0.0	15.45 .65	91.0 2.9	29.66 .11	43.4 2.0
Sept. 7.4	52.21 .11	69.3 0.7	55.86 .09	25.4 +0.1	14.74 .77	93.8 2.6	29.52 .18	45.3 1.9
17.3	52.08 .14	69.8 0.4	55.75 .12	25.5 0.2	13.90 .88	96.2 2.2	29.31 .23	47.1 1.6
27.3	51.93 .15	70.2 +0.2	55.62 .14	25.8 0.3	12.97 .97	98.2 1.8	29.05 .27	48.6 1.3
Oct. 7.3	51.77 .17	70.3 0.0	55.47 .16	26.2 0.4	11.97 1.03	99.8 1.3	28.76 .30	49.8 1.0
17.3	51.60 .17	70.1 −0.2	55.30 .16	26.6 0.4	10.91 1.07	100.9 0.8	28.44 .32	50.5 0.6
27.2	51.44 .16	69.8 0.5	55.15 .15	27.0 0.4	9.83 1.08	101.4 +0.3	28.13 .31	50.9 +0.2
Nov. 6.2	51.29 .14	69.2 0.7	55.00 .14	27.5 0.5	8.75 1.06	101.4 −0.3	27.82 .29	50.9 −0.2
16.2	51.15 .12	68.4 0.9	54.87 .12	27.9 0.5	7.71 1.02	100.8 0.9	27.55 .25	50.4 0.7
26.1	51.05 .09	67.4 1.1	54.76 .09	28.4 0.5	6.71 .94	99.6 1.4	27.31 .20	49.6 1.1
Dec. 6.1	50.97 .06	66.2 1.3	54.69 .05	28.8 0.4	5.82 .84	97.9 2.0	27.14 .15	48.3 1.4
16.1	50.93 −.02	64.8 1.4	54.66 −.02	29.3 0.4	5.04 .71	95.7 2.4	27.03 .08	46.7 1.7
26.1	50.93 +.02	63.3 1.5	54.66 +.02	29.7 0.4	4.39 .56	93.0 2.8	26.98 −.01	44.8 2.0
36.0	50.97 +.05	61.8 −1.6	54.69 +.06	30.2 +0.4	3.91 −.40	90.0 −3.2	27.00 +.06	42.8 −2.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	π Capricorni.		ε Delphini.		*Groombridge 3241.		α Cygni.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$20^h\ 19^m$	$18^\circ\ 37'$	$20^h\ 27^m$	$10^\circ\ 51'$	$20^h\ 30^m$	$72^\circ\ 5'$	$20^h\ 36^m$	$44^\circ\ 48'$
	s	″	s	″	s	″	s	″
Jan. 1.1	53.65 +.03	62.6 +0.1	0.80 +.01	57.5 −1.7	29.12 −.34	46.5 −3.0	59.80 −.08	76.7 −2.7
11.0	53.70 .07	62.7 0.0	0.82 .04	55.9 1.7	28.84 .22	43.4 3.2	59.75 −.03	73.9 2.9
21.0	53.78 .10	62.6 −0.1	0.88 .07	54.2 1.7	28.69 −.09	40.0 3.4	59.74 +.02	70.8 3.0
31.0	53.91 .14	62.5 0.2	0.97 .11	52.5 1.6	28.66 +.04	36.6 3.4	59.79 .07	67.8 3.0
Feb. 10.0	54.06 .17	62.3 0.3	1.10 .14	51.0 1.4	28.77 .17	33.1 3.3	59.89 .12	64.8 2.9
19.9	54.25 .20	62.0 0.4	1.25 .17	49.7 1.2	29.00 .30	29.9 3.1	60.04 .17	62.0 2.6
Mar. 1.9	54.46 .22	61.5 0.5	1.44 .20	48.7 0.9	29.36 .41	26.9 2.8	60.23 .22	59.5 2.3
11.9	54.70 .25	60.9 0.7	1.65 .22	47.9 0.6	29.83 .51	24.3 2.3	60.47 .26	57.5 1.8
21.9	54.96 .27	60.2 0.8	1.88 .25	47.6 −0.2	30.39 .60	22.2 1.8	60.75 .29	55.9 1.3
31.8	55.24 .29	59.3 0.9	2.14 .27	47.6 +0.2	31.03 .67	20.7 1.2	61.06 .32	54.8 0.8
Apr. 10.8	55.54 .30	58.3 1.0	2.42 .28	47.9 0.6	31.72 .71	19.8 −0.6	61.40 .35	54.4 −0.2
20.8	55.85 .31	57.2 1.1	2.71 .29	48.7 0.9	32.45 .73	19.6 +0.1	61.76 .36	54.5 +0.4
30.7	56.17 .32	56.1 1.1	3.00 .30	49.8 1.3	33.18 .73	20.0 0.7	62.13 .37	55.2 1.0
May 10.7	56.49 .32	54.9 1.2	3.30 .30	51.3 1.6	33.90 .70	21.0 1.3	62.49 .36	56.5 1.5
20.7	56.81 .31	53.8 1.1	3.60 .29	52.9 1.8	34.58 .65	22.5 1.8	62.85 .35	58.2 2.0
30.7	57.11 .30	52.7 1.1	3.89 .28	54.8 2.0	35.21 .59	24.6 2.3	63.20 .33	60.4 2.4
June 9.6	57.41 .28	51.6 1.0	4.16 .26	56.9 2.1	35.76 .51	27.2 2.7	63.51 .30	63.0 2.7
19.6	57.67 .25	50.7 0.8	4.40 .23	59.0 2.1	36.22 .41	30.1 3.1	63.79 .26	65.9 3.0
29.6	57.91 .22	50.0 0.6	4.62 .20	61.2 2.1	36.58 .30	33.3 3.3	64.03 .21	69.0 3.2
July 9.6	58.11 .18	49.4 0.5	4.80 .16	63.3 2.1	36.82 .19	36.7 3.5	64.22 .16	72.3 3.3
19.5	58.27 .13	49.0 0.3	4.94 .12	65.3 2.0	36.95 +.07	40.3 3.6	64.36 .11	75.5 3.3
29.5	58.38 .09	48.8 −0.1	5.03 .07	67.2 1.8	36.95 −.05	43.8 3.5	64.44 +.05	78.8 3.2
Aug. 8.5	58.44 +.04	48.8 0.0	5.09 +.03	68.9 1.6	36.84 .17	47.4 3.5	64.46 −.01	81.9 3.1
18.4	58.46 −.01	48.9 +0.2	5.09 −.01	70.5 1.4	36.61 .29	50.8 3.3	64.42 .06	84.9 2.9
28.4	58.43 .05	49.1 0.3	5.06 .05	71.8 1.2	36.26 .39	53.9 3.1	64.33 .11	87.7 2.6
Sept. 7.4	58.36 .09	49.5 0.4	4.98 .09	72.8 0.9	35.82 .49	56.9 2.8	64.20 .16	90.1 2.3
17.4	58.26 .12	49.9 0.5	4.87 .12	73.7 0.7	35.29 .57	59.5 2.4	64.01 .20	92.3 1.9
27.3	58.12 .14	50.4 0.5	4.74 .14	74.2 0.4	34.68 .64	61.7 2.0	63.80 .23	94.0 1.5
Oct. 7.3	57.97 .16	50.9 0.5	4.59 .16	74.5 +0.2	34.01 .69	63.4 1.5	63.55 .25	95.4 1.1
17.3	57.81 .16	51.4 0.5	4.42 .16	74.6 −0.1	33.30 .72	64.7 1.0	63.29 .26	96.2 0.6
27.3	57.65 .16	51.9 0.4	4.26 .16	74.4 0.3	32.56 .74	65.5 +0.5	63.02 .27	96.6 +0.1
Nov. 6.2	57.49 .14	52.3 0.4	4.10 .15	73.9 0.6	31.82 .73	65.6 −0.1	62.76 .26	96.5 −0.4
16.2	57.36 .12	52.7 0.4	3.96 .13	73.2 0.8	31.10 .70	65.2 0.7	62.51 .24	95.9 0.9
26.2	57.25 .09	53.0 0.3	3.84 .11	72.2 1.1	30.41 .66	64.3 1.3	62.27 .22	94.8 1.3
Dec. 6.1	57.17 .06	53.3 0.2	3.74 .08	71.0 1.3	29.78 .59	62.7 1.8	62.07 .19	93.2 1.8
16.1	57.12 −.02	53.5 0.2	3.68 .05	69.6 1.5	29.23 .51	60.7 2.3	61.90 .15	91.1 2.2
26.1	57.12 +.01	53.6 +0.1	3.65 −.01	68.1 1.6	28.76 .41	58.1 2.7	61.77 .10	88.7 2.6
36.1	57.15 +.05	53.7 0.0	3.65 +.02	66.5 −1.7	28.41 −.30	55.2 −3.1	61.69 −.06	86.0 −2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Aquarii.		ν Cygni.		*12 Year Cat. 1870.		61 Cygni (*pr.*)	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$20^h\ 45^m$	$9^\circ\ 27'$	$20^h\ 52^m$	$40^\circ\ 40'$	$20^h\ 53^m$	$80^\circ\ 3'$	$21^h\ 1^m$	$38^\circ\ 6'$
	s	″	s	″	s	″	s	″
Jan. 1.1	39.36 +.01	61.2 +0.6	19.69 −.07	22.0 −2.6	16.30 −.80	68.4 −2.7	4.88 −.07	62.1 −2.3
11.1	39.39 .04	61.7 0.5	19.64 −.03	19.3 2.8	15.60 .59	65.5 3.0	4.83 −.03	59.6 2.5
21.0	39.44 .07	62.2 0.4	19.62 +.01	16.5 2.9	15.11 .37	62.4 3.3	4.83 +.01	57.0 2.7
31.0	39.53 .10	62.6 0.3	19.66 .06	13.6 2.8	14.86 −.13	59.0 3.4	4.86 .06	54.3 2.7
Feb. 10.0	39.65 .13	62.8 +0.2	19.74 .10	10.8 2.7	14.85 +.11	55.6 3.4	4.95 .10	51.7 2.6
20.0	39.80 .16	63.0 0.0	19.86 .15	8.1 2.5	15.09 .35	52.3 3.2	5.07 .15	49.2 2.3
Mar. 1.9	39.98 .19	62.9 −0.2	20.03 .19	5.8 2.2	15.55 .57	49.2 3.0	5.24 .19	47.0 2.0
11.9	40.18 .22	62.6 0.4	20.25 .23	3.8 1.8	16.23 .77	46.4 2.6	5.45 .23	45.1 1.6
21.9	40.41 .24	62.1 0.6	20.50 .27	2.2 1.3	17.10 .96	44.0 2.1	5.70 .26	43.7 1.2
31.8	40.67 .26	61.4 0.8	20.78 .30	1.2 0.8	18.12 1.06	42.2 1.6	5.98 .30	42.8 0.7
Apr. 10.8	40.94 .28	60.5 1.0	21.10 .32	0.7 −0.2	19.25 1.18	40.9 1.0	6.29 .32	42.4 −0.1
20.8	41.23 .30	59.4 1.2	21.43 .34	0.8 +0.4	20.46 1.23	40.3 −0.3	6.62 .34	42.5 +0.4
30.8	41.54 .31	58.2 1.3	21.78 .35	1.4 0.9	21.71 1.24	40.2 +0.3	6.97 .35	43.3 1.0
May 10.7	41.85 .31	56.8 1.4	22.14 .35	2.6 1.4	22.94 1.21	40.8 0.9	7.33 .35	44.5 1.5
20.7	42.16 .31	55.3 1.5	22.49 .34	4.2 1.9	24.12 1.14	42.0 1.5	7.68 .35	46.2 1.9
30.7	42.46 .30	53.8 1.5	22.82 .33	6.4 2.3	25.22 1.04	43.7 2.0	8.02 .33	48.3 2.3
June 9.7	42.75 .28	52.3 1.4	23.14 .30	8.8 2.6	26.19 .90	46.0 2.4	8.35 .31	50.8 2.6
19.6	43.02 .26	50.9 1.4	23.43 .27	11.6 2.9	27.02 .74	48.6 2.8	8.65 .28	53.6 2.9
29.6	43.26 .23	49.6 1.2	23.68 .23	14.6 3.1	27.67 .56	51.6 3.1	8.91 .24	56.6 3.1
July 9.6	43.48 .19	48.5 1.1	23.88 .18	17.7 3.2	28.14 .37	54.8 3.4	9.13 .20	59.8 3.2
19.5	43.65 .15	47.4 0.9	24.03 .13	20.9 3.2	28.40 +.16	58.3 3.5	9.31 .15	63.0 3.2
29.5	43.78 .11	46.6 0.7	24.14 .08	24.1 3.1	28.46 −.05	61.8 3.6	9.43 .10	66.2 3.2
Aug. 8.5	43.86 .06	46.0 0.5	24.19 +.02	27.2 3.0	28.31 .25	65.4 3.5	9.50 +.05	69.3 3.0
18.5	43.90 +.02	45.5 0.4	24.18 −.03	30.1 2.8	27.96 .45	68.9 3.4	9.52 −.01	72.2 2.9
28.4	43.89 −.03	45.3 −0.2	24.12 .08	32.8 2.6	27.41 .64	72.3 3.3	9.49 .05	75.0 2.6
Sept. 7.4	43.84 .07	45.1 0.0	24.02 .13	35.3 2.3	26.68 .80	75.5 3.0	9.41 .10	77.5 2.3
17.4	43.76 .10	45.2 +0.1	23.87 .17	37.4 1.9	25.78 .97	78.4 2.7	9.30 .14	79.7 2.0
27.4	43.65 .12	45.4 0.2	23.69 .20	39.1 1.6	24.73 1.11	81.0 2.4	9.14 .17	81.5 1.6
Oct. 7.3	43.51 .14	45.7 0.3	23.48 .22	40.5 1.2	23.57 1.21	83.1 1.9	8.96 .19	83.0 1.2
17.3	43.36 .15	46.1 0.4	23.25 .23	41.5 0.7	22.31 1.30	84.9 1.5	8.75 .21	84.0 0.8
27.3	43.21 .15	46.5 0.5	23.01 .24	41.9 +0.2	20.98 1.35	86.1 0.9	8.54 .21	84.6 +0.4
Nov. 6.2	43.06 .14	47.0 0.5	22.77 .23	41.9 −0.2	19.62 1.37	86.7 +0.4	8.33 .21	84.8 −0.1
16.2	42.93 .12	47.5 0.5	22.54 .22	41.5 0.7	18.26 1.35	86.8 −0.2	8.12 .20	84.5 0.5
26.2	42.81 .10	48.1 0.6	22.33 .20	40.5 1.2	16.93 1.29	86.4 0.8	7.93 .18	83.7 1.0
Dec. 6.2	42.72 .07	48.7 0.6	22.14 .17	39.1 1.6	15.68 1.20	85.3 1.4	7.76 .16	82.4 1.4
16.1	42.66 .04	49.3 0.6	21.98 .14	37.2 2.0	14.53 1.08	83.6 1.9	7.62 .12	80.8 1.8
26.1	42.63 −.01	49.9 0.6	21.86 .10	35.0 2.4	13.53 .92	81.5 2.4	7.51 .09	78.8 2.2
36.1	42.64 +.02	50.4 +0.6	21.78 −.06	32.5 −2.7	12.70 −.73	78.9 −2.8	7.44 −.05	76.5 −2.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Cygni.		α Cephei.		1 Pegasi.		β Aquarii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	$21^{h}\ 7^{m}$	$29^{\circ}\ 41'$	$21^{h}\ 15^{m}$	$62^{\circ}\ 2'$	$21^{h}\ 16^{m}$	$19^{\circ}\ 15'$	$21^{h}\ 24^{m}$	$6^{\circ}\ 8'$
	s	″	s	″	s	″	s	″
Jan. 1.1	24.74 −.06	58.0 −2.1	27.42 −.25	28.0 −2.6	5.32 −.05	14.2 −1.8	43.92 −.03	20.0 +0.7
11.1	24.70 −.02	55.7 2.3	27.20 .18	25.3 2.9	5.29 −.01	12.3 1.9	43.91 .00	20.7 0.6
21.1	24.70 +.01	53.3 2.4	27.06 .11	22.2 3.2	5.29 +.02	10.4 1.9	43.92 +.03	21.3 0.5
31.0	24.73 .05	50.9 2.4	26.99 −.03	19.0 3.3	5.33 .05	8.5 1.9	43.97 .06	21.8 0.4
Feb. 10.0	24.80 .09	48.5 2.3	27.00 +.05	15.7 3.3	5.40 .09	6.7 1.8	44.05 .09	22.1 0.3
20.0	24.91 .13	46.3 2.1	27.10 .14	12.4 3.1	5.50 .12	5.0 1.6	44.16 .12	22.4 +0.1
Mar. 1.9	25.06 .16	44.3 1.8	27.28 .22	9.4 2.9	5.64 .15	3.5 1.3	44.30 .15	22.4 −0.1
11.9	25.24 .20	42.7 1.4	27.53 .29	6.7 2.5	5.81 .19	2.4 1.0	44.46 .18	22.2 0.3
21.9	25.46 .23	41.5 1.0	27.86 .36	4.4 2.0	6.01 .22	1.6 0.6	44.66 .21	21.7 0.6
31.9	25.71 .26	40.7 −0.5	28.25 .41	2.6 1.5	6.25 .25	1.2 −0.2	44.89 .24	21.0 0.8
Apr. 10.8	25.98 .29	40.5 0.0	28.68 .46	1.4 0.9	6.51 .27	1.2 +0.2	45.14 .26	20.1 1.0
20.8	26.29 .31	40.7 +0.5	29.16 .49	0.8 −0.3	6.79 .29	1.7 0.7	45.41 .28	18.9 1.2
30.8	26.60 .32	41.4 1.0	29.67 .51	0.8 +0.3	7.08 .30	2.6 1.1	45.70 .30	17.6 1.4
May 10.8	26.92 .32	42.6 1.4	30.18 .51	1.5 0.9	7.39 .31	3.9 1.5	46.00 .31	16.1 1.6
20.7	27.25 .32	44.2 1.8	30.69 .50	2.7 1.5	7.70 .31	5.5 1.8	46.31 .31	14.5 1.6
30.7	27.57 .31	46.2 2.2	31.18 .47	4.5 2.0	8.01 .30	7.4 2.0	46.62 .31	12.8 1.7
June 9.7	27.87 .29	48.6 2.4	31.64 .43	6.7 2.5	8.31 .29	9.6 2.3	46.93 .29	11.1 1.7
19.6	28.15 .26	51.1 2.6	32.05 .38	9.4 2.8	8.59 .26	12.0 2.4	47.21 .28	9.4 1.6
29.6	28.40 .23	53.9 2.8	32.41 .32	12.4 3.2	8.84 .24	14.4 2.5	47.48 .25	7.8 1.5
July 9.6	28.61 .19	56.7 2.8	32.70 .25	15.7 3.4	9.06 .20	16.9 2.5	47.72 .22	6.3 1.4
19.6	28.79 .15	59.5 2.8	32.91 .18	19.2 3.5	9.24 .16	19.4 2.4	47.92 .18	5.0 1.2
29.5	28.91 .10	62.4 2.8	33.05 .10	22.8 3.6	9.38 .12	21.8 2.3	48.08 .14	3.9 1.0
Aug. 8.5	28.99 .05	65.1 2.6	33.10 +.02	26.4 3.6	9.47 .07	24.1 2.2	48.20 .10	2.9 0.8
18.5	29.02 +.01	67.7 2.5	33.08 −.06	29.9 3.5	9.52 +.03	26.2 2.0	48.27 .05	2.2 0.6
28.5	29.00 −.04	70.0 2.2	32.97 .14	33.3 3.3	9.53 −.02	28.1 1.8	48.30 +.01	1.7 0.4
Sept. 7.4	28.94 .08	72.1 2.0	32.80 .21	36.4 3.0	9.49 .06	29.8 1.5	48.29 −.03	1.3 −0.2
17.4	28.83 .12	73.9 1.7	32.55 .27	39.3 2.7	9.41 .09	31.2 1.3	48.24 .07	1.2 0.0
27.4	28.70 .15	75.4 1.3	32.25 .33	41.9 2.4	9.30 .12	32.3 1.0	48.15 .10	1.3 +0.1
Oct. 7.3	28.54 .17	76.6 0.9	31.89 .37	44.1 1.9	9.17 .15	33.1 0.6	48.04 .12	1.4 0.3
17.3	28.36 .18	77.3 0.6	31.50 .40	45.8 1.5	9.02 .16	33.7 +0.3	47.91 .13	1.8 0.4
27.3	28.17 .19	77.7 +0.2	31.08 .43	47.0 0.9	8.85 .16	33.8 0.0	47.77 .14	2.2 0.5
Nov. 6.3	27.98 .19	77.7 −0.2	30.65 .43	47.7 +0 4	8.69 .16	33.7 −0.3	47.63 .14	2.7 0.5
16.2	27.80 .18	77.3 0.6	30.22 .43	47.8 −0.2	8.53 .15	33.2 0.6	47.50 .13	3.3 0.6
26.2	27.62 .16	76.4 1.0	29.80 .41	47.4 0.7	8.39 .14	32.4 0.9	47.37 .11	3.9 0.6
Dec. 6.2	27.47 .14	75.2 1.4	29.40 .38	46.3 1.3	8.26 .11	31.4 1.2	47.27 .09	4.6 0.7
16.2	27.35 .11	73.6 1.7	29.04 .34	44.8 1.8	8.16 .09	30.0 1.4	47.19 .07	5.2 0.7
26.1	27.26 .08	71.8 2.0	28.73 .28	42.7 2.3	8.08 .06	28.5 1.6	47.13 .04	5.9 0.7
36.1	27.19 −.04	69.6 −2.2	28.48 −.22	40.2 −2.7	8.04 −.03	27.8 −1.8	47.10 −.02	6.6 +0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*β Cephei.		ξ Aquarii.		ε Pegasi.		*11 Cephei.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	21h 26m	69° 59′	21h 30m	8° 25′	21h 37m	9° 16′	21h 39m	70° 42′
	s	″	s	″	s	″	s	″
Jan. 1.1	56.22 −.41	48.1 −2.4	50.89 −.03	59.8 +0.5	49.10 −.05	62.3 −1.3	58.57 −.45	71.9 −2.3
11.1	55.85 .32	45.4 2.8	50.88 .00	60.3 0.5	49.06 −.02	61.0 1.3	58.15 .36	69.4 2.7
21.1	55.58 .22	42.4 3.1	50.89 +.03	60.8 0.4	49.06 +.01	59.6 1.3	57.84 .26	66.5 3.0
31.0	55.42 −.11	39.2 3.3	50.93 .06	61.1 0.3	49.08 .04	58.3 1.3	57.63 .15	63.4 3.2
Feb. 10.0	55.37 +.01	35.9 3.3	51.00 .09	61.3 +0.1	49.13 .07	57.0 1.2	57.54 −.03	60.1 3.3
20.0	55.43 .12	32.6 3.2	51.11 .12	61.4 0.0	49.22 .10	55.9 1.0	57.57 +.09	56.8 3.3
Mar. 1.9	55.61 .24	29.4 3.0	51.24 .15	61.2 −0.2	49.34 .13	55.0 0.8	57.72 .21	53.6 3.1
11.9	55.90 .34	26.5 2.7	51.41 .18	60.9 0.5	49.49 .16	54.4 0.5	57.98 .32	50.6 2.8
21.9	56.30 .44	24.0 2.3	51.60 .21	60.3 0.7	49.67 .20	54.1 −0.2	58.36 .43	48.0 2.4
31.9	56.79 .52	21.9 1.8	51.82 .23	59.5 0.9	49.88 .23	54.1 +0.2	58.84 .52	45.8 1.9
Apr. 10.8	57.35 .59	20.4 1.2	52.07 .26	58.5 1.1	50.12 .25	54.4 0.5	59.39 .50	44.2 1.3
20.8	57.96 .64	19.5 −0.6	52.34 .28	57.2 1.3	50.38 .27	55.2 0.9	60.02 .64	43.1 0.7
30.8	58.62 .66	19.2 0.0	52.63 .30	55.8 1.5	50.67 .29	56.2 1.2	60.68 .68	42.7 −0.1
May 10.8	59.29 .67	19.6 +0.7	52.94 .31	54.3 1.6	50.97 .30	57.5 1.5	61.38 .69	42.9 +0.5
20.7	59.96 .65	20.6 1.2	53.25 .31	52.7 1.6	51.28 .31	59.2 1.7	62.07 .68	43.7 1.1
30.7	60.60 .62	22.1 1.8	53.56 .31	51.0 1.7	51.58 .30	61.0 1.9	62.74 .65	45.0 1.6
June 9.7	61.20 .57	24.1 2.3	53.87 .30	49.3 1.7	51.88 .29	63.0 2.1	63.38 .61	46.9 2.1
19.6	61.74 .50	26.6 2.7	54.16 .28	47.7 1.6	52.17 .28	65.1 2.1	63.96 .54	49.3 2.6
29.6	62.20 .42	29.5 3.0	54.43 .26	46.2 1.5	52.44 .25	67.3 2.2	64.46 .46	52.1 3.0
July 9.6	62.58 .33	32.7 3.3	54.68 .23	44.8 1.3	52.67 .22	69.4 2.1	64.88 .37	55.2 3.3
19.6	62.86 .23	36.2 3.5	54.89 .19	43.6 1.1	52.88 .18	71.5 2.0	65.21 .27	58.6 3.5
29.5	63.04 .12	39.8 3.6	55.06 .15	42.5 0.9	53.04 .14	73.5 1.9	65.43 .17	62.2 3.6
Aug. 8.5	63.11 +.02	43.4 3.6	55.18 .10	41.7 0.7	53.16 .10	75.3 1.7	65.54 +.06	65.9 3.7
18.5	63.07 −.09	47.1 3.6	55.26 .06	41.1 0.5	53.24 .05	77.0 1.5	65.54 −.05	69.5 3.6
28.5	62.93 .19	50.6 3.5	55.30 +.01	40.7 0.3	53.27 +.01	78.4 1.3	65.43 .16	73.1 3.5
Sept. 7.4	62.69 .29	54.0 3.3	55.29 −.03	40.5 −0.1	53.26 −.03	79.6 1.1	65.22 .26	76.6 3.4
17.4	62.36 .37	57.1 3.0	55.24 .06	40.5 +0.1	53.22 .06	80.6 0.8	64.91 .35	79.9 3.1
27.4	61.95 .45	59.9 2.6	55.17 .09	40.6 0.2	53.13 .09	81.3 0.6	64.52 .43	82.8 2.8
Oct. 7.3	61.46 .51	62.4 2.2	55.06 .12	40.9 0.3	53.03 .12	81.8 0.4	64.05 .51	85.4 2.4
17.3	60.92 .56	64.4 1.8	54.93 .13	41.3 0.4	52.90 .13	82.0 +0.1	63.51 .56	87.6 2.0
27.3	60.33 .60	66.0 1.3	54.80 .14	41.8 0.5	52.76 .14	82.0 −0.1	62.92 .60	89.4 1.5
Nov. 6.3	59.72 .62	67.0 0.7	54.65 .14	42.3 0.6	52.62 .14	81.8 0.3	62.30 .63	90.6 0.9
16.2	59.10 .62	67.4 +0.1	54.52 .13	42.9 0.6	52.48 .14	81.4 0.6	61.66 .64	91.3 +0.4
26.2	58.48 .60	67.3 −0.4	54.40 .11	43.5 0.6	52.34 .12	80.7 0.7	61.02 .63	91.3 −0.2
Dec. 6.2	57.89 .57	66.5 1.0	54.29 .10	44.1 0.6	52.23 .11	79.8 0.9	60.40 .60	90.8 0.8
16.2	57.34 .52	65.2 1.6	54.20 .07	44.8 0.6	52.13 .09	78.8 1.1	59.82 .56	89.7 1.4
26.1	56.85 .46	63.3 2.1	54.14 .05	45.3 0.6	52.06 .06	77.6 1.2	59.29 .50	88.0 1.9
36.1	56.43 −.38	61.0 −2.6	54.11 −.02	45.9 +0.5	52.01 −.04	76.4 −1.3	58.83 −.42	85.8 −2.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Capricorni.		*79 Draconis.		α Aquarii.		α Gruis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	$21^{h}\ 46^{m}$	$14^{\circ}\ 9'$	$21^{h}\ 51^{m}$	$73^{\circ}\ 5'$	$21^{h}\ 59^{m}$	$0^{\circ}\ 56'$	$22^{h}\ 0^{m}$	$47^{\circ}\ 34'$
	s	″	s	″	s	″	s	″
Jan. 1.1	13.59 −.04	35.7 +0.3	12.69 −.55	40.9 −2.1	7.55 −.05	49.7 +0.8	2.89 −.10	80.0 −1.2
11.1	13.57 −.01	35.9 +0.2	12.19 .45	38.5 2.6	7.51 −.03	50.6 0.8	2.81 .06	78.6 1.5
21.1	13.57 +.01	36.0 0.0	11.78 .34	35.8 2.9	7.50 .00	51.4 0.8	2.77 −.01	76.9 1.8
31.0	13.60 .04	36.0 −0.1	11.50 .22	32.7 3.2	7.51 +.02	52.1 0.7	2.78 +.03	74.9 2.1
Feb. 10.0	13.66 .08	35.8 0.3	11.35 −.08	29.4 3.3	7.55 .06	52.7 0.5	2.84 .08	72.8 2.2
20.0	13.75 .11	35.5 0.4	11.33 +.05	26.1 3.3	7.62 .09	53.2 0.3	2.94 .12	70.4 2.4
Mar. 2.0	13.87 .14	34.9 0.6	11.45 .19	22.9 3.1	7.72 .12	53.4 +0.1	3.08 .17	68.0 2.5
11.9	14.03 .17	34.2 0.8	11.71 .32	19.8 2.9	7.85 .15	53.4 −0.1	3.27 .21	65.5 2.5
21.9	14.21 .20	33.3 1.0	12.10 .44	17.1 2.5	8.01 .18	53.2 0.4	3.51 .26	62.9 2.5
31.9	14.43 .23	32.2 1.2	12.60 .55	14.8 2.0	8.21 .21	52.7 0.6	3.79 .30	60.4 2.5
Apr. 10.9	14.67 .26	30.9 1.4	13.20 .64	13.0 1.5	8.43 .24	51.9 0.9	4.11 .34	58.0 2.4
20.8	14.94 .28	29.5 1.5	13.88 .71	11.8 0.9	8.69 .26	50.9 1.2	4.46 .37	55.7 2.2
30.8	15.23 .30	27.9 1.6	14.62 .75	11.2 −0.3	8.96 .28	49.6 1.4	4.84 .40	53.6 2.0
May 10.8	15.54 .31	26.2 1.7	15.39 .77	11.2 +0.3	9.26 .30	48.1 1.6	5.25 .42	51.7 1.7
20.7	15.86 .32	24.6 1.7	16.17 .77	11.7 0.9	9.56 .31	46.4 1.7	5.68 .43	50.1 1.5
30.7	16.18 .32	22.9 1.6	16.93 .74	12.9 1.5	9.87 .31	44.6 1.9	6.11 .43	48.8 1.1
June 9.7	16.50 .31	21.3 1.6	17.65 .69	14.7 2.0	10.18 .30	42.7 1.9	6.54 .42	47.9 0.8
19.7	16.80 .30	19.7 1.4	18.31 .62	16.9 2.5	10.48 .29	40.8 1.9	6.96 .41	47.3 −0.4
29.6	17.09 .27	18.4 1.3	18.90 .54	19.6 2.8	10.76 .27	38.9 1.8	7.36 .38	47.1 0.0
July 9.6	17.35 .24	17.2 1.1	19.39 .44	22.6 3.2	11.02 .24	37.1 1.7	7.72 .34	47.3 +0.4
19.6	17.58 .21	16.2 0.9	19.77 .33	26.0 3.4	11.24 .21	35.4 1.6	8.04 .30	47.9 0.8
29.6	17.77 .17	15.4 0.6	20.05 .21	29.5 3.6	11.43 .17	33.9 1.4	8.31 .24	48.8 1.1
Aug. 8.5	17.91 .12	14.9 0.4	20.20 +.09	33.1 3.7	11.58 .12	32.6 1.2	8.53 .18	50.1 1.4
18.5	18.01 .08	14.6 −0.2	20.23 −.03	36.8 3.7	11.68 .08	31.5 1.0	8.68 .12	51.7 1.6
28.5	18.07 +.03	14.5 0.0	20.13 .15	40.5 3.6	11.74 +.04	30.6 0.8	8.77 +.05	53.4 1.8
Sept. 7.4	18.07 −.01	14.6 +0.2	19.93 .26	44.0 3.5	11.76 .00	29.9 0.6	8.79 −.01	55.3 1.9
17.4	18.04 .05	14.9 0.4	19.60 .37	47.4 3.2	11.73 −.04	29.5 0.3	8.75 .06	57.3 2.0
27.4	17.98 .08	15.3 0.5	19.18 .47	50.5 2.9	11.67 .07	29.2 −0.1	8.66 .12	59.2 1.9
Oct. 7.4	17.88 .11	15.9 0.6	18.67 .55	53.3 2.6	11.59 .10	29.2 0.0	8.52 .16	61.1 1.8
17.3	17.76 .13	16.5 0.6	18.07 .62	55.7 2.2	11.48 .12	29.3 +0.2	8.34 .19	62.7 1.5
27.3	17.63 .14	17.2 0.7	17.42 .68	57.6 1.7	11.35 .13	29.6 0.3	8.14 .21	64.2 1.3
Nov. 6.3	17.49 .14	17.8 0.6	16.72 .71	59.0 1.1	11.22 .13	30.0 0.5	7.92 .22	65.3 0.9
16.3	17.35 .13	18.4 0.6	16.00 .73	59.9 +0.6	11.09 .13	30.5 0.6	7.69 .22	66.0 0.5
26.2	17.23 .12	19.0 0.6	15.26 .73	60.2 0.0	10.97 .12	31.1 0.7	7.48 .21	66.4 +0.2
Dec. 6.2	17.11 .10	19.6 0.5	14.54 .71	59.9 −0.6	10.86 .10	31.9 0.7	7.28 .18	66.3 −0.2
16.2	17.02 .08	20.0 0.4	13.85 .66	58.9 1.2	10.76 .09	32.6 0.8	7.11 .15	65.9 0.7
26.1	16.95 .05	20.4 0.3	13.22 .60	57.4 1.8	10.68 .07	33.4 0.8	6.97 .12	65.0 1.0
36.1	16.91 −.03	20.7 +0.2	12.66 −.52	55.4 −2.3	10.63 −.04	34.3 +0.8	6.87 −.08	63.8 −1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	θ Aquarii.		π Aquarii.		η Aquarii.		*226 Cephei (B.)	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	22 h 9 m	8° 25′	22 h 18 m	0° 43′	22 h 28 m	0° 46′	22 h 29 m	75° 33′
	s	″	s	″	s	″	s	″
Jan. 1.2	59.62 −.06	37.0 +0.5	39.52 −.07	19.2 −0.8	41.85 −.07	60.3 +0.8	57.20 −.73	52.8 −1.6
11.1	59.57 .03	37.5 0.4	39.46 .04	18.3 0.8	41.79 .05	61.1 0.8	56.50 .64	50.9 2.1
21.1	59.55 −.01	37.8 0.3	39.43 −.02	17.5 0.8	41.75 −.03	61.8 0.7	55.91 .53	48.6 2.5
31.1	59.55 +.02	38.1 +0.2	39.42 +.01	16.7 0.7	41.74 .00	62.5 0.6	55.44 .40	45.8 2.9
Feb. 10.0	59.58 .05	38.3 0.0	39.44 .03	16.0 0.6	41.75 +.03	63.0 0.5	55.11 .25	42.8 3.1
20.0	59.65 .08	38.2 −0.1	39.49 .06	15.5 0.4	41.79 .06	63.5 0.3	54.93 −.10	39.6 3.2
Mar. 2.0	59.74 .11	38.0 0.3	39.57 .10	15.2 −0.2	41.86 .09	63.7 +0.1	54.92 +.07	36.3 3.2
12.0	59.87 .14	37.6 0.5	39.68 .13	15.1 0.0	41.96 .12	63.6 −0.1	55.06 .23	33.2 3.0
21.9	60.03 .17	36.9 0.8	39.83 .16	15.3 +0.3	42.10 .15	63.4 0.4	55.37 .38	30.2 2.8
31.9	60.22 .21	36.0 1.0	40.01 .19	15.7 0.6	42.27 .19	62.9 0.7	55.83 .52	27.6 2.4
Apr. 10.9	60.44 .24	34.9 1.2	40.22 .22	16.5 0.9	42.47 .22	62.1 0.9	56.42 .65	25.4 1.9
20.9	60.69 .26	33.5 1.4	40.46 .25	17.5 1.1	42.70 .25	61.0 1.2	57.13 .75	23.7 1.4
30.8	60.96 .28	32.0 1.6	40.72 .28	18.7 1.4	42.97 .27	59.7 1.4	57.92 .82	22.6 0.8
May 10.8	61.26 .30	30.4 1.7	41.01 .29	20.2 1.6	43.25 .29	58.2 1.6	58.77 .87	22.1 −0.2
20.8	61.56 .31	28.6 1.8	41.31 .31	21.9 1.8	43.55 .31	56.4 1.8	59.66 .89	22.1 +0.4
30.7	61.88 .32	26.8 1.8	41.63 .31	23.7 1.9	43.86 .31	54.6 1.9	60.56 .89	22.8 1.0
June 9.7	62.20 .31	25.0 1.8	41.94 .31	25.7 1.9	44.18 .31	52.7 1.9	61.44 .85	24.0 1.5
19.7	62.50 .30	23.2 1.7	42.24 .30	27.6 2.0	44.48 .30	50.7 1.9	62.26 .79	25.8 2.0
29.7	62.79 .28	21.5 1.6	42.53 .28	29.6 1.9	44.78 .28	48.8 1.9	63.02 .71	28.1 2.5
July 9.6	63.06 .25	20.0 1.4	42.80 .25	31.5 1.8	45.05 .26	46.9 1.8	63.69 .62	30.8 2.9
19.6	63.30 .22	18.7 1.3	43.03 .22	33.3 1.7	45.29 .23	45.2 1.7	64.26 .50	33.9 3.2
29.6	63.50 .18	17.5 1.0	43.23 .18	34.9 1.5	45.51 .19	43.6 1.5	64.70 .38	37.2 3.4
Aug. 8.6	63.66 .14	16.6 0.8	43.40 .14	36.4 1.3	45.68 .15	42.2 1.3	65.02 .25	40.8 3.6
18.5	63.78 .10	15.9 0.6	43.52 .10	37.6 1.1	45.81 .11	41.0 1.1	65.20 +.11	44.5 3.7
28.5	63.86 .05	15.4 0.4	43.60 .06	38.6 0.9	45.90 .07	40.1 0.8	65.24 −.02	48.2 3.7
Sept. 7.5	63.89 +.01	15.2 −0.1	43.63 +.02	39.4 0.7	45.94 +.03	39.3 0.6	65.15 .16	51.9 3.7
17.4	63.88 −.03	15.1 +0.1	43.63 −.02	40.0 0.5	45.95 −.01	38.8 0.4	64.92 .29	55.5 3.5
27.4	63.83 .06	15.3 0.2	43.59 .06	40.3 +0.2	45.92 .05	38.6 −0.2	64.57 .41	59.0 3.3
Oct. 7.4	63.75 .09	15.6 0.4	43.52 .08	40.5 0.0	45.86 .07	38.5 0.0	64.10 .52	62.2 3.0
17.4	63.65 .11	16.0 0.5	43.42 .10	40.5 −0.1	45.77 .10	38.6 +0.2	63.53 .62	65.0 2.7
27.3	63.54 .12	16.5 0.6	43.31 .12	40.3 0.3	45.66 .11	38.8 0.3	62.86 .70	67.5 2.2
Nov. 6.3	63.41 .13	17.1 0.6	43.19 .12	39.9 0.4	45.55 .12	39.2 0.5	62.12 .77	69.5 1.7
16.3	63.28 .13	17.8 0.6	43.06 .12	39.4 0.6	45.42 .12	39.8 0.6	61.33 .81	71.0 1.2
26.3	63.15 .12	18.4 0.6	42.94 .12	38.8 0.6	45.30 .12	40.4 0.6	60.50 .84	71.9 +0.6
Dec. 6.2	63.04 .11	19.1 0.6	42.82 .11	38.1 0.7	45.19 .11	41.0 0.7	59.65 .84	72.2 0.0
16.2	62.94 .09	19.7 0.6	42.72 .09	37.3 0.8	45.08 .10	41.8 0.7	58.81 .82	71.9 −0.6
26.2	62.86 .07	20.3 0.5	42.63 .08	36.5 0.8	44.99 .08	42.5 0.8	58.01 .77	71.0 1.2
36.1	62.80 −.05	20.8 +0.4	42.57 −.06	35.7 −0.8	44.92 −.06	43.3 +0.8	57.27 −.70	69.5 −1.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Pegasi.		*ι Cephei.		λ Aquarii.		α Piscis Australis. (*Fomalhaut.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 22 34	° ′ 10 9	h m 22 45	° ′ 65 31	h m 22 45	° ′ 8 15	h m 22 50	° ′ 30 18
	s	″	s	″	s	″	s	″
Jan. 1.2	59.99 −.08	28.3 −1.1	3.52 −.41	30.0 −1.5	51.25 −.08	64.1 +0.5	29.17 −.10	34.3 −0.2
11.1	59.91 .06	27.2 1.2	3.14 .36	28.2 2.0	51.18 .06	64.5 0.4	29.09 .08	33.9 0.5
21.1	59.86 .04	26.0 1.2	2.80 .30	25.9 2.4	51.13 .04	64.9 0.3	29.02 .05	33.2 0.8
31.1	59.83 −.02	24.8 1.2	2.53 .23	23.3 2.8	51.10 −.01	65.2 +0.2	28.98 −.02	32.3 1.1
Feb. 10.1	59.83 +.01	23.6 1.1	2.34 .15	20.4 3.0	51.10 +.01	65.3 0.0	28.98 +.01	31.1 1.3
20.0	59.86 .04	22.6 0.9	2.23 −.06	17.3 3.1	51.12 .04	65.2 −0.2	29.00 .04	29.7 1.5
Mar. 2.0	59.92 .08	21.7 0.7	2.22 +.03	14.2 3.1	51.18 .07	64.9 0.4	29.06 .08	28.1 1.7
12.0	60.01 .11	21.1 0.5	2.30 .13	11.2 2.9	51.26 .11	64.4 0.6	29.16 .11	26.3 1.9
22.0	60.14 .15	20.7 −0.2	2.48 .22	8.4 2.7	51.39 .14	63.7 0.8	29.29 .15	24.3 2.0
31.9	60.30 .18	20.7 +0.1	2.75 .31	5.9 2.3	51.54 .17	62.7 1.1	29.46 .19	22.2 2.1
Apr. 10.9	60.50 .21	20.9 0.4	3.10 .39	3.8 1.8	51.74 .21	61.5 1.3	29.67 .23	20.0 2.2
20.9	60.73 .25	21.6 0.8	3.53 .46	2.2 1.3	51.96 .24	60.1 1.5	29.92 .26	17.8 2.2
30.8	60.99 .27	22.5 1.1	4.02 .51	1.1 0.8	52.21 .27	58.5 1.7	30.20 .29	15.5 2.2
May 10.8	61.27 .29	23.7 1.4	4.56 .55	0.7 −0.2	52.49 .29	56.8 1.8	30.50 .32	13.3 2.2
20.8	61.57 .31	25.3 1.6	5.13 .58	0.8 +0.4	52.79 .31	54.9 1.9	30.84 .34	11.2 2.0
30.8	61.89 .31	27.0 1.9	5.72 .58	1.5 1.0	53.10 .31	53.0 1.9	31.18 .35	9.2 1.9
June 9.7	62.20 .31	29.0 2.0	6.29 .57	2.8 1.5	53.42 .32	51.1 1.9	31.54 .35	7.5 1.6
19.7	62.51 .30	31.1 2.1	6.85 .54	4.6 2.0	53.74 .31	49.2 1.8	31.89 .35	5.9 1.4
29.7	62.80 .28	33.3 2.2	7.37 .50	6.8 2.5	54.04 .29	47.4 1.7	32.24 .34	4.7 1.1
July 9.7	63.08 .26	35.5 2.2	7.85 .44	9.5 2.8	54.33 .27	45.7 1.6	32.56 .31	3.8 0.7
19.6	63.32 .23	37.6 2.1	8.26 .38	12.5 3.2	54.59 .24	44.3 1.4	32.86 .28	3.2 0.4
29.6	63.54 .19	39.7 2.0	8.60 .30	15.8 3.4	54.82 .21	43.0 1.2	33.13 .24	3.0 −0.1
Aug. 8.6	63.71 .15	41.7 1.9	8.86 .22	19.3 3.5	55.01 .17	41.9 0.9	33.35 .20	3.1 +0.3
18.5	63.84 .11	43.5 1.7	9.04 .14	22.9 3.6	55.16 .13	41.1 0.7	33.53 .15	3.5 0.6
28.5	63.93 .07	45.0 1.5	9.14 +.05	26.6 3.6	55.27 .09	40.6 0.4	33.66 .11	4.2 0.9
Sept. 7.5	63.98 +.03	46.4 1.3	9.15 −.03	30.2 3.6	55.33 .05	40.3 −0.2	33.74 .06	5.2 1.1
17.5	63.98 −.01	47.6 1.0	9.08 .11	33.7 3.4	55.36 +.01	40.2 0.0	33.77 +.01	6.4 1.3
27.4	63.96 .04	48.5 0.8	8.93 .18	37.1 3.2	55.35 −.03	40.4 +0.2	33.76 −.03	7.8 1.4
Oct. 7.4	63.90 .07	49.1 0.5	8.71 .25	40.1 2.9	55.30 .06	40.7 0.4	33.71 .07	9.2 1.4
17.4	63.81 .10	49.5 0.3	8.43 .31	42.9 2.6	55.23 .08	41.1 0.5	33.62 .10	10.6 1.4
27.4	63.70 .11	49.7 +0.1	8.08 .36	45.3 2.2	55.13 .10	41.7 0.6	33.51 .12	12.0 1.3
Nov. 6.3	63.59 .12	49.7 −0.1	7.70 .40	47.2 1.7	55.02 .11	42.3 0.7	33.38 .14	13.3 1.2
16.3	63.46 .13	49.5 0.4	7.28 .43	48.7 1.2	54.90 .12	43.0 0.7	33.23 .14	14.4 1.0
26.3	63.33 .12	49.0 0.5	6.83 .45	49.5 +0.6	54.78 .12	43.7 0.7	33.09 .14	15.2 0.7
Dec. 6.2	63.21 .12	48.4 0.7	6.37 .46	49.9 0.0	54.67 .11	44.4 0.7	32.94 .14	15.8 0.5
16.2	63.10 .11	47.6 0.9	5.92 .45	49.6 −0.6	54.56 .10	45.0 0.6	32.81 .13	16.2 +0.2
26.2	63.00 .09	46.6 1.0	5.48 .42	48.7 1.1	54.47 .09	45.6 0.5	32.69 .11	16.3 −0.1
36.2	62.92 −.07	45.5 −1.1	5.07 −.39	47.3 −1.6	54.39 −.07	46.1 +0.5	32.59 −.09	16.0 −0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α Pegasi. (Markab.)*		**o Cephei.*		*θ* Piscium.		*ι* Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 22 58	° ′ 14 30	h m 23 13	° ′ 67 24	h m 23 21	° ′ 5 40	h m 23 33	° ′ 4 55
	s	″	s	″	s	″	s	″
Jan. 1.2	18.62 −.10	40.4 −1.1	18.51 −.46	31.0 −1.1	24.01 −.10	9.9 −0.8	17.60 −.10	32.8 −0.8
11.2	18.53 .08	39.2 1.2	18.06 .43	29.6 1.6	23.91 .09	9.0 0.9	17.51 .09	31.9 0.8
21.1	18.45 .06	37.9 1.3	17.65 .38	27.7 2.1	23.83 .07	8.2 0.9	17.42 .08	31.1 0.8
31.1	18.40 .04	36.6 1.3	17.30 .31	25.4 2.5	23.77 .05	7.3 0.8	17.35 .06	30.3 0.8
Feb. 10.1	18.37 −.01	35.3 1.2	17.03 .23	22.7 2.8	23.73 −.03	6.5 0.7	17.30 .04	29.6 0.7
20.1	18.37 +.02	34.1 1.1	16.85 .14	19.7 3.0	23.72 .00	5.8 0.6	17.28 −.01	28.9 0.5
Mar. 2.0	18.41 .05	33.0 1.0	16.76 −.04	16.7 3.0	23.73 +.03	5.3 0.4	17.28 +.02	28.5 0.4
12.0	18.48 .09	32.2 0.7	16.77 +.07	13.7 3.0	23.78 .06	5.0 −0.2	17.32 .05	28.2 −0.2
22.0	18.58 .12	31.6 0.5	16.89 .17	10.7 2.8	23.86 .10	4.9 +0.1	17.39 .09	28.2 +0.1
Apr. 1.0	18.72 .16	31.2 −0.2	17.12 .27	8.1 2.5	23.98 .14	5.1 0.3	17.50 .13	28.4 0.4
10.0	18.90 .20	31.3 +0.2	17.44 .37	5.7 2.1	24.14 .18	5.6 0.6	17.65 .17	28.9 0.6
20.9	19.12 .23	31.6 0.5	17.85 .45	3.9 1.6	24.33 .21	6.3 0.9	17.83 .20	29.7 0.9
30.9	19.37 .26	32.3 0.9	18.34 .52	2.5 1.1	24.56 .24	7.4 1.2	18.05 .24	30.7 1.2
May 10.8	19.64 .29	33.4 1.2	18.88 .57	1.6 −0.5	24.82 .27	8.7 1.4	18.30 .27	32.1 1.4
20.8	19.94 .30	34.8 1.5	19.48 .61	1.4 0.0	25.10 .29	10.3 1.7	18.58 .30	33.6 1.7
30.8	20.25 .31	36.4 1.8	20.10 .62	1.7 +0.6	25.41 .31	12.1 1.9	18.88 .30	35.4 1.8
June 9.8	20.57 .32	38.3 2.0	20.72 .62	2.6 1.2	25.72 .31	14.0 2.0	19.19 .31	37.3 2.0
19.7	20.89 .31	40.4 2.1	21.34 .60	4.1 1.7	26.03 .31	16.0 2.1	19.51 .31	39.3 2.0
29.7	21.19 .30	42.6 2.2	21.93 .57	6.0 2.2	26.34 .30	18.1 2.1	19.82 .31	41.4 2.1
July 9.7	21.48 .27	44.9 2.3	22.48 .52	8.4 2.6	26.64 .28	20.2 2.1	20.12 .29	43.5 2.0
19.7	21.74 .25	47.2 2.3	22.97 .46	11.2 2.9	26.91 .26	22.2 2.0	20.40 .27	45.4 1.9
29.6	21.97 .21	49.4 2.2	23.39 .38	14.3 3.2	27.16 .23	24.2 1.8	20.66 .24	47.3 1.8
Aug. 8.6	22.16 .17	51.6 2.1	23.73 .31	17.7 3.4	27.37 .19	25.9 1.7	20.88 .21	49.1 1.7
18.6	22.32 .13	53.6 1.9	24.00 .22	21.2 3.6	27.55 .16	27.5 1.5	21.07 .17	50.7 1.5
28.5	22.43 .09	55.5 1.7	24.17 .13	24.8 3.7	27.68 .12	28.9 1.3	21.22 .13	52.0 1.2
Sept. 7.5	22.50 .05	57.1 1.5	24.26 +.04	28.5 3.7	27.78 .08	30.1 1.1	21.33 .09	53.1 1.0
17.5	22.53 +.01	58.6 1.3	24.26 −.04	32.2 3.6	27.83 +.04	31.0 0.8	21.40 .05	54.0 0.8
27.5	22.52 −.02	59.8 1.1	24.17 .13	35.7 3.4	27.85 .00	31.8 0.6	21.43 +.01	54.7 0.5
Oct. 7.4	22.48 .05	60.7 0.8	24.00 .20	39.0 3.2	27.84 −.03	32.2 0.4	21.43 −.02	55.1 0.3
17.4	22.41 .08	61.4 0.6	23.76 .28	42.0 2.9	27.79 .06	32.5 +0.2	21.39 .04	55.3 +0.1
27.4	22.32 .10	61.8 0.3	23.45 .34	44.7 2.5	27.73 .08	32.6 0.0	21.34 .07	55.4 −0.1
Nov. 6.4	22.22 .11	62.0 +0.1	23.09 .39	47.0 2.1	27.64 .09	32.4 −0.2	21.26 .08	55.2 0.2
16.3	22.10 .12	62.0 −0.2	22.67 .43	48.9 1.6	27.54 .10	32.1 0.4	21.17 .10	54.9 0.4
26.3	21.97 .12	61.7 0.4	22.22 .47	50.2 1.0	27.43 .11	31.7 0.5	21.06 .10	54.4 0.5
Dec. 6.3	21.85 .12	61.2 0.6	21.74 .48	50.9 +0.4	27.32 .11	31.1 0.6	20.96 .11	53.9 0.6
16.2	21.73 .12	60.5 0.8	21.25 .49	51.1 −0.1	27.21 .11	30.5 0.7	20.85 .11	53.2 0.7
26.2	21.62 .10	59.6 1.0	20.76 .48	50.6 0.7	27.10 .10	29.7 0.8	20.74 .10	52.4 0.8
36.2	21.52 −.09	58.5 −1.1	20.29 −.45	49.6 −1.3	27.00 −.09	28.9 −0.9	20.64 −.09	51.6 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*γ Cephei.		*Groombridge 4163.		ω Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 23 33	° ′ 76 54	h m 23 48	° ′ 73 41	h m 23 52	° ′ 6 8
	s	″	s	″	s	″
Jan. 1.2	62.26 −.89	57.2 −0.7	33.36 −.70	44.5 −0.5	40.01 −.11	51.7 −0.8
11.2	61.39 .84	56.3 1.3	32.67 .67	43.6 1.1	39.90 .10	50.9 0.8
21.1	60.58 .76	54.7 1.8	32.03 .61	42.2 1.7	39.81 .09	50.0 0.8
31.1	59.87 .65	52.7 2.3	31.44 .54	40.3 2.1	39.72 .07	49.2 0.8
Feb. 10.1	59.28 .52	50.2 2.7	30.95 .44	37.9 2.5	39.66 .05	48.5 0.7
20.1	58.83 .36	47.3 2.9	30.56 .32	35.2 2.8	39.61 −.03	47.9 0.6
Mar. 2.0	58.55 .19	44.3 3.1	30.31 .19	32.3 3.0	39.60 .00	47.4 0.4
12.0	58.44 −.01	41.2 3.1	30.19 −.05	29.2 3.0	39.61 +.03	47.1 −0.2
22.0	58.52 +.17	38.1 3.0	30.21 +.10	26.2 3.0	39.67 .07	47.0 0.0
Apr. 1.0	58.78 .34	35.1 2.8	30.38 .24	23.2 2.8	39.76 .11	47.1 +0.3
10.9	59.20 .51	32.5 2.5	30.70 .38	20.6 2.5	39.88 .15	47.5 0.6
20.9	59.79 .65	30.2 2.0	31.14 .51	18.3 2.1	40.05 .19	48.3 0.9
30.9	60.51 .78	28.4 1.6	31.71 .61	16.4 1.6	40.26 .22	49.3 1.1
May 10.8	61.34 .87	27.1 1.0	32.37 .70	15.0 1.1	40.50 .25	50.5 1.4
20.8	62.26 .94	26.3 −0.5	33.11 .77	14.2 −0.5	40.77 .28	52.0 1.6
30.8	63.23 .98	26.2 +0.1	33.90 .81	13.9 0.0	41.06 .30	53.8 1.8
June 9.8	64.22 .99	26.6 0.7	34.72 .83	14.2 +0.6	41.37 .31	55.6 1.9
19.7	65.21 .97	27.6 1.3	35.55 .82	15.1 1.1	41.68 .32	57.7 2.0
29.7	66.16 .93	29.1 1.8	36.36 .79	16.5 1.7	42.00 .31	59.7 2.1
July 9.7	67.06 .86	31.2 2.3	37.13 .74	18.4 2.1	42.31 .30	61.8 2.1
19.7	67.88 .76	33.6 2.7	37.84 .68	20.8 2.6	42.59 .28	63.8 2.0
29.6	68.60 .66	36.5 3.0	38.48 .59	23.6 2.9	42.86 .25	65.8 1.9
Aug. 8.6	69.20 .54	39.7 3.3	39.03 .50	26.7 3.2	43.10 .22	67.6 1.7
18.6	69.67 .41	43.2 3.5	39.48 .39	30.1 3.5	43.30 .18	69.2 1.5
28.5	70.01 .27	46.8 3.7	39.82 .28	33.6 3.6	43.46 .15	70.7 1.3
Sept. 7.5	70.21 +.13	50.6 3.8	40.05 .17	37.3 3.7	43.59 .11	71.9 1.1
17.5	70.26 −.02	54.4 3.8	40.16 +.05	41.1 3.7	43.68 .07	72.9 0.9
27.5	70.17 .16	58.1 3.7	40.16 −.06	44.8 3.7	43.73 +.03	73.6 0.6
Oct. 7.4	69.94 .30	61.7 3.5	40.04 .17	48.4 3.5	43.75 .00	74.1 0.4
17.4	69.58 .43	65.2 3.3	39.81 .28	51.8 3.3	43.74 −.03	74.5 +0.2
27.4	69.09 .55	68.3 3.0	39.49 .38	55.0 3.0	43.69 .05	74.6 0.0
Nov. 6.4	68.49 .65	71.1 2.6	39.06 .47	57.8 2.6	43.63 .07	74.5 −0.1
16.3	67.78 .75	73.4 2.1	38.55 .54	60.2 2.2	43.55 .09	74.3 0.3
26.3	66.99 .82	75.3 1.6	37.97 .61	62.2 1.7	43.46 .10	73.9 0.5
Dec. 6.3	66.14 .87	76.5 1.0	37.33 .66	63.5 1.1	43.36 .10	73.3 0.6
16.2	65.25 .90	77.2 +0.4	36.65 .69	64.4 +0.5	43.25 .11	72.7 0.7
26.2	64.34 .90	77.3 −0.2	35.95 .70	64.5 −0.1	43.14 .11	72.0 0.7
36.2	63.45 −.88	76.7 −0.9	35.25 −.69	64.1 −0.7	43.03 −.10	71.3 −0.8

AT WASHINGTON MEAN AND APPARENT NOON

Date 1871.

[illegible]

AT WASHINGTON MEAN AND APPARENT NOON.

Date. 1871.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		Hourly motion. Mean Noon.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Mar. 1	22 48 47.57	49.51	− 7 33 22.8	10.9	9.358	56.99	+12 33.09	16 10.34	1 5.43	22 36 14.38
2	22 52 31.89	33.80	7 10 31.9	20.1	9.337	57.25	12 20.85	10.10	5.35	22 40 10.94
3	22 56 15.71	17.59	6 47 35.0	23.3	9.316	57.49	12 8.11	9.86	5.28	22 44 7.49
4	22 59 59.05	60.89	6 24 32.4	20.9	9.297	57.71	11 54.90	9.61	5.21	22 48 4.04
5	23 3 41.93	43.73	6 1 24.7	13.4	9.278	57.92	11 41.22	9.36	5.15	22 52 0.60
6	23 7 24.37	26.13	5 38 12.1	1.0	9.260	58.12	11 27.11	9.11	5.09	22 55 57.15
7	23 11 6.40	8.12	5 14 55.0	44.1	9.243	58.30	11 12.59	8.85	5.03	22 59 53.70
8	23 14 48.04	49.72	4 51 33.6	23.0	9.227	58.46	10 57.68	8.59	4.97	23 3 50.25
9	23 18 29.32	30.95	4 27 68.6	58.2	9.212	58.61	10 42.40	8.33	4.92	23 7 46.81
10	23 22 10.26	11.85	4 4 40.1	29.9	9.198	58.75	10 26.79	8.06	4.87	23 11 43.36
11	23 25 50.97	52.42	3 40 68.5	58.5	9.185	58.87	10 10.85	7.79	4.82	23 15 39.91
12	23 29 31.19	32.70	3 17 34.2	24.4	9.173	58.98	9 54.61	7.52	4.77	23 19 36.47
13	23 33 11.23	12.70	2 53 57.6	48.1	9.162	59.07	9 38.10	7.25	4.73	23 23 33.02
14	23 36 51.02	52.44	2 30 19.0	9.8	9.152	59.14	9 21.34	6.98	4.69	23 27 29.57
15	23 40 30.56	31.94	2 6 38.8	29.9	9.143	59.20	9 4.33	6.70	4.65	23 31 26.12
16	23 44 9.89	11.22	1 42 57.3	48.7	9.135	59.25	8 47.10	6.43	4.62	23 35 22.68
17	23 47 49.02	50.30	1 19 14.9	6.6	9.127	59.28	8 29.68	6.15	4.59	23 39 19.23
18	23 51 27.97	29.20	0 55 32.0	23.9	9.120	59.30	8 12.09	5.88	4.56	23 43 15.78
19	23 55 6.76	7.94	0 31 48.9	41.1	9.113	59.30	7 54.33	5.60	4.54	23 47 12.33
20	23 58 45.41	46.54	− 0 7 66.1	58.6	9.107	59.28	7 36.42	5.33	4.52	23 51 8.89
21	0 2 23.92	25.02	+ 0 15 36.0	43.2	9.102	59.24	7 18.39	5.05	4.50	23 55 5.44
22	0 6 2.33	3.38	0 39 17.1	24.0	9.098	59.19	7 0.25	4.78	4.48	23 59 1.99
23	0 9 40.63	41.64	1 2 56.8	63.4	9.094	59.12	6 42.01	4.50	4.47	0 2 58.54
24	0 13 18.85	19.81	1 26 34.7	41.0	9.091	59.04	6 23.67	4.23	4.46	0 6 55.10
25	0 16 57.01	57.92	1 50 10.4	16.4	9.089	58.94	6 5.28	3.96	4.46	0 10 51.65
26	0 20 35.13	35.99	2 13 43.6	49.2	9.088	58.82	5 46.86	3.69	4.46	0 14 48.20
27	0 24 13.23	14.04	2 37 13.9	19.2	9.087	58.69	5 28.40	3.42	4.46	0 18 44.76
28	0 27 51.32	52.09	3 0 40.9	45.9	9.087	58.55	5 9.94	3.15	4.46	0 22 41.31
29	0 31 29.42	30.15	3 24 4.2	8.9	9.088	58.39	4 51.49	2.88	4.47	0 26 37.86
30	0 35 7.55	8.23	3 47 23.5	27.9	9.090	58.22	4 33.08	2.61	4.48	0 30 34.41
31	0 38 45.74	46.37	4 10 38.6	42.7	9.093	58.03	4 14.71	2.33	4.49	0 34 30.97
Apr. 1	0 42 24.01	24.60	4 33 49.0	52.8	9.097	57.83	3 56.44	2.06	4.50	0 38 27.52
2	0 46 2.38	2.93	4 56 54.3	57.8	9.101	57.62	3 38.27	1.79	4.52	0 42 24.07
3	0 49 40.86	41.36	5 19 54.2	57.4	9.107	57.39	3 20.20	1.52	4.54	0 46 20.62
4	0 53 19.48	19.94	5 42 48.5	51.4	9.113	57.14	3 2.26	1.24	4.56	0 50 17.18
5	0 56 58.26	58.68	6 5 36.8	39.4	9.121	56.88	2 44.50	0.97	4.59	0 54 13.73
6	1 0 37.24	37.61	6 28 18.8	21.1	9.129	56.61	2 26.93	0.69	4.62	0 58 10.28
7	1 4 16.44	16.76	6 50 54.1	56.1	9.138	56.33	2 9.57	0.41	4.65	1 2 6.84
8	1 7 55.86	56.13	7 13 22.5	24.2	9.148	56.03	1 52.44	16 0.13	4.68	1 6 3.39
9	1 11 35.52	35.75	7 35 43.7	45.2	9.159	55.72	1 35.56	15 59.85	4.72	1 9 59.94
10	1 15 15.45	15.64	7 57 57.2	58.4	9.170	55.40	1 18.95	59.58	4.76	1 13 56.50
11	1 18 55.68	55.83	8 20 2.8	3.7	9.182	55.06	1 2.62	59.30	4.80	1 17 53.05
12	1 22 36.21	36.31	8 42 0.2	0.9	9.195	54.71	0 46.60	59.03	4.85	1 21 49.60
13	1 26 17.07	17.14	9 3 49.0	49.5	9.209	54.35	0 30.91	58.75	4.89	1 25 46.16
14	1 29 58.27	58.30	9 25 29.0	29.2	9.223	53.97	0 15.56	58.48	4.94	1 29 42.71
15	1 33 39.82	39.81	9 46 59.7	59.7	9.238	53.58	+ 0 0.56	58.21	4.99	1 33 39.26
16	1 37 21.74	21.70	10 8 20.8	20.6	9.254	53.17	− 0 14.08	57.94	5.04	1 37 35.82
17	1 41 4.04	3.96	10 29 32.0	31.6	9.270	52.75	0 28.33	57.67	5.09	1 41 32.37
18	1 44 46.73	46.61	10 50 32.9	32.3	9.287	52.32	0 42.19	57.40	5.15	1 45 28.93
19	1 48 29.82	29.66	11 11 23.2	22.4	9.304	51.87	0 55.65	57.14	5.21	1 49 25.48
20	1 52 13.31	13.12	11 32 2.4	1.4	9.321	51.40	1 8.71	56.88	5.27	1 53 22.03
21	1 55 57.23	57.01	11 52 30.3	29.1	9.339	50.92	1 21.35	56.62	5.33	1 57 18.59
22	1 59 41.58	41.33	12 12 46.5	45.1	9.357	50.42	1 33.56	56.37	5.40	2 1 15.14
23	2 3 26.37	26.09	12 32 50.6	49.1	9.376	49.91	1 45.32	56.12	5.47	2 5 11.70
24	2 7 11.61	11.29	12 52 42.3	40.7	9.395	49.39	1 56.62	55.88	5.54	2 9 8.25
25	2 10 57.32	56.97	13 12 21.3	19.6	9.414	48.86	2 7.46	55.63	5.61	2 13 4.80
26	2 14 43.50	43.13	13 31 47.2	45.3	9.434	48.30	2 17.84	55.39	5.68	2 17 1.36
27	2 18 30.15	29.75	13 50 59.6	57.6	9.454	47.73	2 27.74	55.15	5.75	2 20 57.91
28	2 22 17.29	16.87	14 9 58.3	56.2	9.474	47.15	2 37.16	54.91	5.83	2 24 54.47
29	2 26 4.93	4.49	14 28 42.9	40.7	9.495	46.56	2 46.08	54.67	5.90	2 28 51.02
30	2 29 53.06	52.60	+14 47 13.2	10.9	9.516	45.96	− 2 54.50	15 54.44	1 5.98	2 32 47.58

NOTE.—For *Mean* interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON

Date 1871.	APPARENT RIGHT ASCENSION Mean Noon	APPARENT RIGHT ASCENSION Apparent Noon	APPARENT DECLINATION Mean Noon	APPARENT DECLINATION Apparent Noon	Horary Motion at Mean Noon: Right Ascension	Horary Motion at Mean Noon: Declination	Equation of Time for Apparent Noon	[illegible] at Apparent Noon	[illegible] Noon	[illegible] Mean Sun
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
May 1	2 33 41.71	41.21	+15 5 [illegible]	[illegible]	9.5[illegible]	45.14	−3 2.4	15 54.21	6 [illegible]	2 [illegible]
2	2 37 [illegible]	[illegible]	15 23 [illegible]	27.0	[illegible]	44.71	3 [illegible]	[illegible]	6 [illegible]	2 [illegible]
3	2 41 [illegible]	[illegible]	15 41 14.7	[illegible]	[illegible]	44 [illegible]	3 16.6[illegible]	[illegible]	6 [illegible]	2 [illegible]
4	2 45 10.[illegible]	10 [illegible]	15 5[illegible] 44.4	41 [illegible]	[illegible]	41.41	3 2[illegible]	[illegible]	6 [illegible]	2 [illegible]
5	2 49 1.73	1.17	16 15 [illegible]	[illegible]	9.6[illegible]	42.74	3 [illegible]	[illegible]	6 [illegible]	2 [illegible]
6	2 52 [illegible]	[illegible]	16 32 [illegible]	[illegible]	9.6[illegible]	42 [illegible]	3 [illegible]	[illegible]	6 [illegible]	2 [illegible]
7	2 56 45.11	44 [illegible]	16 41 [illegible]	34 [illegible]	9.6[illegible]	41.17	3 [illegible]	[illegible]	6 [illegible]	3 [illegible]
8	3 0 [illegible]	[illegible]	17 [illegible]	[illegible]	[illegible]	[illegible]	3 [illegible]	[illegible]	6 [illegible]	3 [illegible]
9	3 4 [illegible]	[illegible]	17 22 [illegible]	[illegible]	[illegible]	[illegible]	3 [illegible]	[illegible]	6 [illegible]	3 [illegible]
10	3 8 [illegible]	[illegible]	17 37 [illegible]	[illegible]	[illegible]	[illegible]	3 [illegible]	[illegible]	6 [illegible]	3 [illegible]
11	3 12 [illegible]	[illegible]	17 53 [illegible]	[illegible]	[illegible]	[illegible]	3 [illegible]	51 [illegible]	[illegible]	3 [illegible]
12	3 16 11.7[illegible]	11.12	18 [illegible] 47.1	44 [illegible]	[illegible]	17.74	3 [illegible]	51 [illegible]	[illegible]	3 [illegible]
13	3 20 [illegible]	[illegible]	18 21 41.[illegible]	41.5	[illegible]	[illegible]	3 [illegible]	51 [illegible]	7 [illegible]	3 [illegible]
14	3 24 [illegible]	4.74	18 [illegible]	[illegible]	[illegible]	[illegible]	3 [illegible]	51 [illegible]	7 [illegible]	3 [illegible]
15	3 28 [illegible]	1.41	18 52 41.5	[illegible]	[illegible]	[illegible]	3 [illegible]	51 14	7 [illegible]	3 [illegible]
16	3 31 [illegible]	[illegible]	19 6 41.[illegible]	[illegible]	[illegible]	[illegible]	3 51.14	[illegible]	7 [illegible]	3 [illegible]
17	3 35 [illegible]	[illegible]	19 20 21.1	21.0	[illegible]	[illegible]	3 51 [illegible]	[illegible]	7 [illegible]	3 [illegible]
18	3 39 [illegible]	[illegible]	19 33 44.[illegible]	[illegible]	[illegible]	[illegible]	3 4[illegible]	[illegible]	7 [illegible]	3 [illegible]
19	3 43 [illegible]	[illegible]	19 46 [illegible]	44.3	[illegible]	[illegible]	3 47 [illegible]	[illegible]	7 [illegible]	3 [illegible]
20	3 47 [illegible]	[illegible]	19 [illegible]	[illegible]	[illegible]	[illegible]	3 44 [illegible]	[illegible]	7 [illegible]	3 [illegible]
21	3 51 [illegible]	[illegible]	20 11 [illegible]	47.0	10.0[illegible]	[illegible]	3 41 [illegible]	[illegible]	7 [illegible]	3 [illegible]
22	3 55 [illegible]	[illegible]	20 23 [illegible]	47.4	10.0[illegible]	[illegible]	3 37 [illegible]	[illegible]	7 [illegible]	3 [illegible]
23	3 59 [illegible]	[illegible]	20 35 [illegible]	[illegible]	10.0[illegible]	[illegible]	3 [illegible]	[illegible]	7 [illegible]	4 [illegible]
24	4 3 [illegible]	[illegible]	20 46 [illegible]	[illegible]	10.0[illegible]	[illegible]	3 27 [illegible]	[illegible]	7 [illegible]	4 [illegible]
25	4 7 [illegible]	[illegible]	20 57 41.4	41 [illegible]	10.0[illegible]	[illegible]	3 21 [illegible]	[illegible]	7 [illegible]	4 [illegible]
26	4 11 [illegible]	[illegible]	21 [illegible]	[illegible]	10.11 [illegible]	[illegible]	3 1[illegible]	[illegible]	[illegible]	4 [illegible]
27	4 16 [illegible]	[illegible]	21 1[illegible]	[illegible]	10.13 [illegible]	[illegible]	3 [illegible]	[illegible]	[illegible]	4 [illegible]
28	4 20 [illegible]	[illegible]	21 [illegible]	[illegible]	10.1[illegible]	[illegible]	3 [illegible]	[illegible]	[illegible]	4 [illegible]
29	4 24 [illegible]	[illegible]	21 [illegible]	[illegible]	10.17 [illegible]	[illegible]	2 [illegible]	[illegible]	[illegible]	4 [illegible]
30	4 [illegible]	[illegible]	21 [illegible]	[illegible]	10.1[illegible]	[illegible]	2 47 [illegible]	[illegible]	[illegible]	4 [illegible]
31	4 [illegible]	[illegible]	21 [illegible]	[illegible]	[illegible]	[illegible]	2 [illegible]	[illegible]	[illegible]	4 [illegible]
June 1	4 [illegible]	[illegible]	22 [illegible]	[illegible]	[illegible]	[illegible]	2 [illegible]	[illegible]	[illegible]	4 [illegible]
2	4 [illegible]	[illegible]	22 11 [illegible]	[illegible]	[illegible]	[illegible]	2 [illegible]	[illegible]	[illegible]	4 [illegible]
3	4 44 [illegible]	[illegible]	22 [illegible]	[illegible]	[illegible]	[illegible]	2 11 [illegible]	[illegible]	[illegible]	4 [illegible]
4	4 [illegible]	[illegible]	22 [illegible]	[illegible]	[illegible]	17 [illegible]	2 [illegible]	[illegible]	[illegible]	4 [illegible]
5	4 [illegible]	[illegible]	22 [illegible]	[illegible]	[illegible]	[illegible]	1 [illegible]	[illegible]	[illegible]	4 [illegible]
6	4 [illegible]	[illegible]	22 [illegible]	[illegible]	[illegible]	[illegible]	1 41 [illegible]	[illegible]	[illegible]	4 [illegible]
7	5 1 [illegible]	[illegible]	22 [illegible]	[illegible]	[illegible]	[illegible]	1 [illegible]	[illegible]	[illegible]	5 [illegible]
8	5 5 14.14	[illegible]	22 [illegible]	[illegible]	[illegible]	[illegible]	1 [illegible]	[illegible]	[illegible]	5 [illegible]
9	5 9 [illegible]	[illegible]	22 [illegible]	[illegible]	[illegible]	[illegible]	1 [illegible]	[illegible]	[illegible]	5 [illegible]
10	5 13 [illegible]	[illegible]	23 1 [illegible]	[illegible]	[illegible]	[illegible]	0 [illegible]	[illegible]	[illegible]	5 [illegible]
11	5 17 [illegible]	[illegible]	23 [illegible]	[illegible]	[illegible]	[illegible]	0 44 [illegible]	[illegible]	[illegible]	[illegible]
12	5 21 [illegible]	[illegible]	23 [illegible]	[illegible]	[illegible]	[illegible]	0 [illegible]	[illegible]	[illegible]	[illegible]
13	5 [illegible]	[illegible]	23 1[illegible]	[illegible]	[illegible]	[illegible]	0 [illegible]	[illegible]	[illegible]	[illegible]
14	5 [illegible]	[illegible]	23 16 [illegible]	[illegible]	[illegible]	[illegible]	0 [illegible]	[illegible]	[illegible]	5 [illegible]
15	5 34 [illegible]	[illegible]	23 1[illegible]	[illegible]	[illegible]	[illegible]	+ 0 [illegible]	[illegible]	[illegible]	[illegible]
16	5 [illegible]	[illegible]	23 [illegible]	[illegible]	[illegible]	[illegible]	0 [illegible]	[illegible]	[illegible]	[illegible]
17	5 [illegible]	[illegible]	23 [illegible]	[illegible]	[illegible]	[illegible]	0 [illegible]	[illegible]	[illegible]	[illegible]
18	5 [illegible]	[illegible]	23 [illegible]	[illegible]	[illegible]	[illegible]	0 [illegible]	[illegible]	[illegible]	[illegible]
19	5 [illegible]	[illegible]	23 [illegible]	[illegible]	[illegible]	[illegible]	0 [illegible]	[illegible]	[illegible]	[illegible]
20	5 [illegible]	[illegible]	23 [illegible]	[illegible]	[illegible]	[illegible]	1 [illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	23 [illegible]	[illegible]	[illegible]	[illegible]	1 [illegible]	[illegible]	[illegible]	[illegible]
22	6 [illegible]	[illegible]	23 [illegible]	[illegible]	[illegible]	[illegible]	1 [illegible]	[illegible]	[illegible]	6 [illegible]
23	6 [illegible]	[illegible]	23 [illegible]	[illegible]	[illegible]	[illegible]	1 [illegible]	[illegible]	[illegible]	6 [illegible]
24	6 [illegible]	[illegible]	23 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6 [illegible]
25	6 [illegible]	[illegible]	23 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6 [illegible]
26	6 [illegible]	[illegible]	23 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6 [illegible]
27	6 [illegible]	[illegible]	23 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6 [illegible]
28	6 [illegible]	[illegible]	23 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6 [illegible]
29	6 [illegible]	[illegible]	23 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6 [illegible]
30	6 [illegible]	[illegible]	23 [illegible]	[illegible]	[illegible]	[illegible]	3 [illegible]	[illegible]	[illegible]	6 [illegible]

[illegible]

AT WASHINGTON MEAN AND APPARENT NOON.

Date. 1871.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		Hourly motion, Mean Noon.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
July 1	6 40 43.06	43.67	+23 7 32.5	31.9	10.337	10.06	+ 3 28.98	15 46.20	1 8.79	6 37 14.11
2	6 44 51.02	51.66	23 3 18.9	18.2	10.326	11.07	3 40.38	46.20	8.75	6 41 10.67
3	6 48 58.71	59.38	22 58 41.2	40.4	10.314	12.07	3 51.51	46.20	8.71	6 45 7.23
4	6 53 6.11	6.81	22 53 39.5	38.6	10.302	13.07	4 2.36	46.20	8.67	6 49 3.78
5	6 57 13.21	13.94	22 48 13.9	12.9	10.289	14.06	4 12.90	46.21	8.63	6 53 0.34
6	7 1 19.99	20.75	22 42 24.5	23.4	10.275	15.05	4 23.12	46.22	8.58	6 56 56.90
7	7 5 26.42	27.21	22 36 11.5	10.2	10.261	16.03	4 32.99	46.23	8.53	7 0 53.46
8	7 9 32.50	33.31	22 29 35.0	33.6	10.246	17.01	4 42.52	46.25	8.48	7 4 50.01
9	7 13 38.21	39.04	22 22 35.1	33.6	10.230	17.98	4 51.67	46.27	8.42	7 8 46.57
10	7 17 43.53	44.38	22 15 12.1	10.5	10.213	18.94	5 0.43	46.29	8.36	7 12 43.13
11	7 21 48.45	49.33	22 7 26.1	24.4	10.196	19.89	5 8.79	46.32	8.30	7 16 39.69
12	7 25 52.96	53.86	21 59 17.2	15.4	10.178	20.84	5 16.72	46.36	8.24	7 20 36.25
13	7 29 57.00	57.93	21 50 45.7	43.7	10.159	21.78	5 24.22	46.40	8.17	7 24 32.81
14	7 34 0.60	1.53	21 41 51.6	49.5	10.140	22.70	5 31.27	46.44	8.10	7 28 29.36
15	7 38 3.72	4.67	21 32 35.4	33.1	10.120	23.63	5 37.83	46.49	8.03	7 32 25.92
16	7 42 6.35	7.31	21 22 57.1	54.7	10.099	24.54	5 43.90	46.55	7.96	7 36 22.47
17	7 46 8.47	9.44	21 12 57.0	54.5	10.078	25.45	5 49.46	46.61	7.88	7 40 19.03
18	7 50 10.07	11.06	21 2 35.2	32.6	10.056	26.35	5 54.50	46.68	7.81	7 44 15.59
19	7 54 11.13	12.13	20 51 52.0	49.3	10.033	27.24	5 59.01	46.75	7.73	7 48 12.14
20	7 58 11.64	12.65	20 40 47.6	44.8	10.009	28.13	6 2.96	46.83	7.66	7 52 8.70
21	8 2 11.58	12.60	20 29 22.4	19.5	9.985	28.98	6 6.35	46.91	7.58	7 56 5.26
22	8 6 10.95	11.97	20 17 36.5	33.5	9.961	29.84	6 9.16	47.00	7.50	8 0 1.81
23	8 10 9.71	10.74	20 5 30.3	27.2	9.936	30.68	6 11.36	47.09	7.42	8 3 58.37
24	8 14 7.88	8.91	19 53 3.9	0.7	9.911	31.51	6 12.96	47.19	7.34	8 7 54.93
25	8 18 5.45	6.48	19 40 17.7	14.4	9.886	32.33	6 13.97	47.29	7.25	8 11 51.48
26	8 22 2.41	3.44	19 27 11.8	8.4	9.861	33.14	6 14.37	47.40	7.17	8 15 48.04
27	8 25 58.76	59.79	19 13 46.7	43.2	9.836	33.94	6 14.16	47.51	7.08	8 19 44.60
28	8 29 54.50	55.52	18 59 62.5	58.9	9.811	34.73	6 13.34	47.62	7.00	8 23 41.15
29	8 33 49.62	50.63	18 45 59.6	55.9	9.785	35.51	6 11.90	47.74	6.91	8 27 37.71
30	8 37 44.13	45.13	18 31 38.1	34.4	9.760	36.27	6 9.85	47.86	6.83	8 31 34.27
31	8 41 38.04	39.03	18 16 58.5	54.7	9.734	37.02	6 7.20	47.98	6.74	8 35 30.82
Aug. 1	8 45 31.34	32.32	18 1 60.9	57.1	9.709	37.76	6 3.94	48.10	6.65	8 39 27.38
2	8 49 24.03	25.00	17 46 45.7	41.9	9.683	38.49	6 0.08	48.23	6.56	8 43 23.93
3	8 53 16.12	17.08	17 31 13.1	9.2	9.658	39.21	5 55.61	48.36	6.47	8 47 20.49
4	8 57 7.62	8.56	17 15 23.4	19.5	9.634	39.92	5 50.55	48.50	6.39	8 51 17.05
5	9 0 58.53	59.45	16 59 16.8	12.9	9.609	40.62	5 44.91	48.64	6.30	8 55 13.60
6	9 4 48.86	49.77	16 42 53.8	49.9	9.585	41.30	5 38.68	48.78	6.22	8 59 10.16
7	9 8 38.62	39.51	16 26 14.5	10.6	9.561	41.97	5 31.88	48.92	6.13	9 3 6.71
8	9 12 27.81	28.68	16 9 19.2	15.4	9.538	42.63	5 24.51	49.07	6.05	9 7 3.27
9	9 16 16.44	17.28	15 52 8.2	4.4	9.514	43.28	5 16.58	49.22	5.96	9 10 59.82
10	9 20 4.50	5.32	15 34 41.9	38.1	9.491	43.91	5 8.09	49.37	5.88	9 14 56.38
11	9 23 52.01	52.80	15 16 60.5	56.8	9.468	44.53	4 59.05	49.52	5.80	9 18 52.93
12	9 27 38.97	39.73	14 59 4.3	0.7	9.445	45.14	4 49.45	49.68	5.72	9 22 49.49
13	9 31 25.39	26.12	14 40 53.7	50.2	9.422	45.74	4 39.31	49.85	5.64	9 26 46.04
14	9 35 11.26	11.96	14 22 29.0	25.6	9.400	46.32	4 28.63	50.02	5.56	9 30 42.60
15	9 38 56.60	57.27	14 3 50.5	47.1	9.378	46.89	4 17.42	50.20	5.48	9 34 39.15
16	9 42 41.41	42.05	13 44 58.4	55.1	9.356	47.44	4 5.67	50.38	5.40	9 38 35.71
17	9 46 25.70	26.30	13 25 53.2	50.0	9.334	47.98	3 53.40	50.57	5.32	9 42 32.26
18	9 50 9.47	10.03	13 6 35.2	32.2	9.313	48.51	3 40.62	50.76	5.25	9 46 28.82
19	9 53 52.73	53.25	12 47 4.7	1.9	9.292	49.03	3 27.33	50.95	5.17	9 50 25.37
20	9 57 35.49	35.98	12 27 22.1	19.5	9.272	49.52	3 13.53	51.15	5.10	9 54 21.93
21	10 1 17.76	18.21	12 7 27.7	25.2	9.251	50.01	2 59.25	51.35	5.03	9 58 18.48
22	10 4 59.55	59.96	11 47 21.7	19.4	9.231	50.48	2 44.49	51.56	4.97	10 2 15.03
23	10 8 40.87	41.24	11 27 4.7	2.6	9.212	50.94	2 29.26	51.77	4.90	10 6 11.59
24	10 12 21.74	22.07	11 6 36.8	34.9	9.193	51.38	2 13.57	51.98	4.84	10 10 8.14
25	10 16 2.17	2.46	10 45 58.4	56.7	9.175	51.81	1 57.44	52.19	4.78	10 14 4.70
26	10 19 42.18	42.43	10 25 9.9	8.4	9.158	52.23	1 40.91	52.41	4.72	10 18 1.25
27	10 23 21.78	21.99	10 4 11.7	10.4	9.142	52.63	1 23.96	52.63	4.66	10 21 57.80
28	10 27 0.98	1.14	9 43 3.6	2.6	9.126	53.02	1 6.61	52.86	4.61	10 25 54.36
29	10 30 39.82	39.93	9 21 46.4	45.6	9.111	53.40	0 48.90	53.08	4.56	10 29 50.91
30	10 34 18.31	18.38	9 0 20.3	19.8	9.097	53.76	0 30.84	53.31	4.51	10 33 47.47
31	10 37 56.48	56.50	+ 8 38 45.7	45.4	9.084	54.12	+ 0 12.46	15 53.53	1 4.46	10 37 44.02

NOTE.—For *Mean* interval of Semidiameter passing the Meridian, subtract 0s.19 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date. 1871.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		Hourly motion, Mean Noon.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Ap-parent Noon.	Mean Noon.	Ap-parent Noon.	Right Ascen-sion.	Decli-nation.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Sept. 1	10 41 34.34	34.34	+ 8 17 2.7	2.7	9.071	54.46	− 0 6.23	15 53.76	1 4.42	10 41 40.57
2	10 45 11.92	11.85	7 55 11.7	12.0	9.060	54.79	0 25.20	53.99	4.37	10 45 37.13
3	10 48 49.21	49.09	7 33 13.0	13.7	9.049	55.10	0 44.45	54.22	4.33	10 49 33.68
4	10 52 26.25	26.08	7 11 6.8	7.8	9.039	55.40	1 3.96	54.45	4.29	10 53 30.23
5	10 56 3.07	2.85	6 48 53.5	54.8	9.030	55.69	1 23.70	54.69	4.26	10 57 26.79
6	10 59 39.69	39.42	6 26 33.5	35.1	9.022	55.97	1 43.63	54.92	4.22	11 1 23.34
7	11 3 16.11	15.79	6 4 6.9	8.9	9.014	56.23	2 3.75	55.16	4.19	11 5 19.89
8	11 6 52.36	51.99	5 41 34.3	36.6	9.007	56.48	2 24.06	55.40	4.16	11 9 16.45
9	11 10 28.45	28.03	5 18 55.7	58.3	9.001	56.72	2 44.52	55.64	4.14	11 13 13.00
10	11 14 4.41	3.94	4 56 11.6	14.5	8.996	56.94	3 5.10	55.89	4.12	11 17 9.55
11	11 17 40.24	39.72	4 33 22.4	25.7	8.991	57.15	3 25.81	56.14	4.10	11 21 6.10
12	11 21 15.97	15.40	4 10 28.4	32.0	8.987	57.34	3 46.63	56.39	4.08	11 25 2.66
13	11 24 51.60	50.98	3 47 29.8	33.7	8.983	57.52	4 7.54	56.64	4.07	11 28 59.21
14	11 28 27.17	26.49	3 24 27.1	31.4	8.980	57.69	4 28.52	56.90	4.06	11 32 55.76
15	11 32 2.63	1.95	3 1 20.6	25.3	8.978	57.84	4 49.57	57.16	4.05	11 36 52.32
16	11 35 38.15	37.36	2 38 10.7	15.7	8.977	57.98	5 10.66	57.42	4.05	11 40 48.87
17	11 39 13.59	12.75	2 14 57.8	63.2	8.976	58.10	5 31.75	57.69	4.05	11 44 45.42
18	11 42 49.02	48.13	1 51 42.1	47.9	8.976	58.20	5 52.87	57.96	4.05	11 48 41.98
19	11 46 24.47	23.54	1 28 24.1	30.2	8.977	58.29	6 13.96	58.23	4.06	11 52 38.53
20	11 49 59.94	58.94	1 5 4.1	10.5	8.979	58.37	6 35.03	58.50	4.07	11 56 35.08
21	11 53 35.46	34.41	0 41 42.5	49.3	8.980	58.43	6 56.06	58.77	4.08	12 0 31.63
22	11 57 11.05	9.95	+ 0 18 19.6	26.7	8.985	58.48	7 17.03	59.04	4.09	12 4 28.19
23	12 0 46.73	45.58	− 0 4 64.3	56.8	8.989	58.51	7 37.91	59.32	4.11	12 8 24.74
24	12 4 22.52	21.31	0 28 28.7	20.9	8.994	58.53	7 58.66	59.60	4.13	12 12 21.29
25	12 7 58.44	57.18	0 51 53.4	45.2	9.000	58.53	8 19.29	15 59.88	4.16	12 16 17.85
26	12 11 34.52	33.21	1 15 18.1	9.6	9.007	58.52	8 39.76	16 0.15	4.18	12 20 14.40
27	12 15 10.77	9.40	1 38 42.3	33.5	9.015	58.49	9 0.05	0.43	4.21	12 24 10.95
28	12 18 47.22	45.80	2 1 65.8	56.7	9.024	58.46	9 20.15	0.70	4.24	12 28 7.50
29	12 22 23.91	22.44	2 25 28.3	18.9	9.034	58.41	9 40.02	0.98	4.28	12 32 4.06
30	12 25 60.85	59.33	2 48 49.3	39.6	9.045	58.34	9 59.63	1.25	4.32	12 36 0.61
Oct. 1	12 29 38.06	36.49	3 11 68.6	58.6	9.056	58.26	10 18.97	1.53	4.36	12 39 57.16
2	12 33 15.57	13.95	3 35 25.9	15.6	9.069	58.17	10 38.00	1.80	4.41	12 43 53.71
3	12 36 53.41	51.74	3 58 40.9	30.4	9.083	58.07	10 56.72	2.08	4.46	12 47 50.26
4	12 40 31.60	29.88	4 21 53.2	42.4	9.099	57.95	11 15.08	2.35	4.52	12 51 46.82
5	12 44 10.15	8.38	4 44 62.4	51.3	9.114	57.81	11 33.08	2.62	4.58	12 55 43.37
6	12 47 49.09	47.27	5 7 68.3	56.9	9.131	57.66	11 50.70	2.89	4.64	12 59 39.93
7	12 51 28.42	26.56	5 30 70.3	58.7	9.148	57.50	12 7.91	3.16	4.70	13 3 36.48
8	12 55 8.19	6.28	5 53 68.2	56.4	9.166	57.32	12 24.70	3.43	4.76	13 7 33.03
9	12 58 48.40	46.44	6 16 61.7	49 6	9.185	57.13	12 41.05	3.70	4.83	13 11 29.59
10	13 2 29.08	27.08	6 39 50.3	38.0	9.205	56.92	12 56.92	3.97	4.89	13 15 26.14
11	13 6 10.24	8.20	7 2 33.7	21.2	9.225	56.69	13 12.31	4.25	4.96	13 19 22.69
12	13 9 51.90	49.82	7 24 71.4	58.7	9.246	56.44	13 27.21	4.52	5.03	13 23 19.25
13	13 13 34.06	31.94	7 47 43.1	30.2	9.268	56.19	13 41.60	4.80	5.10	13 27 15.80
14	13 17 16.75	14.58	8 9 68.3	55.3	9.290	55.91	13 55.47	5.07	5.18	13 31 12.35
15	13 20 59.98	57.77	8 32 26.7	13.6	9.312	55.61	14 8.80	5.35	5.26	13 35 8.91
16	13 24 43.77	41.52	8 54 37.8	24.6	9.336	55.30	14 21.56	5.63	5.34	13 39 5.46
17	13 28 28.12	25.84	9 16 41.2	27.9	9.369	54.97	14 33.76	5.91	5.43	13 43 2.01
18	13 32 13.06	10.74	9 38 36.5	23.1	9.385	54.63	14 45.38	6.19	5.52	13 46 58.57
19	13 35 58.69	56.24	10 0 23.4	9.9	9.410	54.27	14 56.40	6.46	5.61	13 50 55.12
20	13 39 44.75	42.36	10 21 61.3	47.7	9.436	53.89	15 6.81	6.74	5.70	13 54 51.67
21	13 43 31.53	29.11	10 43 30.0	16.3	9.462	53.49	15 16.60	7.01	5.80	13 58 48.23
22	13 47 18.95	16.50	11 4 49.0	35.3	9.489	53.08	15 25.74	7.29	5.89	14 2 44.78
23	13 51 7.03	4.55	11 25 57.9	44.2	9.517	52.65	15 34.22	7.56	5.99	14 6 41.34
24	13 54 55.78	53.27	11 46 56.3	[illegible]	9.546	52.21	15 42.03	7.83	6.09	14 10 37.89
25	13 58 45.23	42.70	12 7 [illegible]	[illegible]	9.575	51.75	15 49.15	8.10	6.19	14 14 34.44
26	14 2 35.39	32.84	12 28 [illegible]	[illegible]	[illegible]	51.27	15 55.55	8.36	6.29	14 18 31.00
27	14 6 26.27	23.70	12 48 [illegible]	[illegible]	[illegible]	[illegible]	16 1.22	8.62	6.40	14 22 27.55
28	14 10 17.90	15.31	13 8 [illegible]	[illegible]	[illegible]	[illegible]	16 6.16	8.88	6.51	14 26 24.11
29	14 14 10.28	7.67	[illegible]	[illegible]	[illegible]	[illegible]	16 10.34	9.14	6.62	14 30 20.66
30	14 18 3.43	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	16 13.75	9.39	6.73	14 34 17.22
31	14 21 57.37	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	16 16.37	16 9.64	1 6.84	14 38 13.77

Note.—For *Mean* [illegible]act 0s.18 from the **Sidereal Interval.**

AT WASHINGTON MEAN AND APPARENT NOON.

Date. 1871.	APPARENT RIGHT ASCENSION. Mean Noon.	APPARENT RIGHT ASCENSION. Apparent Noon.	APPARENT DECLINATION. Mean Noon.	APPARENT DECLINATION. Apparent Noon.	Hourly motion. Mean Noon. Right Ascension.	Hourly motion. Mean Noon. Declination.	Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	h m s	s	° ′ ″	″	s	′	m s	′ ″	m s	h m s
Nov. 1	14 25 52.11	49.45	−14 27 40.2	27.1	9.798	48.07	−16 18.20	16 9.88	1 6.95	14 42 10.33
2	14 29 47.66	44.99	14 46 47.0	34.1	9.832	47.48	16 19.21	10.12	7.07	14 46 6.88
3	14 33 44.04	41.36	15 5 39.5	26.8	9.866	46.88	16 19.40	10.36	7.18	14 50 3.44
4	14 37 41.25	38.56	15 24 17.3	4.8	9.901	46.26	16 18.75	10.60	7.30	14 53 59.99
5	14 41 39.30	36.61	15 42 40.1	27.8	9.936	45.62	16 17.26	10.84	7.41	14 57 56.55
6	14 45 38.21	35.51	16 0 47.3	35.2	9.972	44.97	16 14.92	11.07	7.53	15 1 53.10
7	14 49 37.97	35.27	16 18 38.6	26.7	10.007	44.30	16 11.73	11.30	7.65	15 5 49.66
8	14 53 38.58	35.89	16 36 13.5	1.8	10.043	43.61	16 7.68	11.53	7.77	15 9 46.21
9	14 57 40.05	37.36	16 53 31.7	20.2	10.079	42.90	16 2.78	11.76	7.88	15 13 42.77
10	15 1 42.38	39.69	17 10 32.7	21.5	10.115	42.18	15 57.01	11.98	8.00	15 17 39.32
11	15 5 45.57	42.89	17 27 16.1	5.2	10.151	41.43	15 50.39	12.20	8.12	15 21 35.88
12	15 9 49.62	46.95	17 43 41.4	30.8	10.186	40.67	15 42.91	12.42	8.24	15 25 32.44
13	15 13 54.51	51.86	17 59 48.3	38.0	10.221	39.89	15 34.58	12.64	8.36	15 29 28.99
14	15 17 60.24	57.61	18 15 36.3	26.3	10.256	39.10	15 25.41	12.85	8.47	15 33 25.55
15	15 22 6.81	4.19	18 30 65.0	55.3	10.291	38.29	15 15.40	13.07	8.59	15 37 22.10
16	15 26 14.21	11.61	18 46 14.1	4.7	10.325	37.46	15 4.56	13.28	8.71	15 41 18.66
17	15 30 22.44	19.87	19 0 63.0	54.0	10.359	36.61	14 52.89	13.49	8.83	15 45 15.21
18	15 34 31.50	28.96	19 15 31.5	22.8	10.393	35.75	14 40.40	13.70	8.94	15 49 11.77
19	15 38 41.37	38.87	19 29 39.1	30.7	10.427	34.87	14 27.10	13.91	9.06	15 53 8.33
20	15 42 52.02	49.56	19 43 25.5	17.5	10.460	33.98	14 13.01	14.11	9.18	15 57 4.89
21	15 47 3.46	1.03	19 56 50.3	42.6	10.493	33.07	13 58.13	14.31	9.30	16 1 1.44
22	15 51 15.69	13.30	20 9 53.0	45.7	10.526	32.15	13 42.47	14.50	9.41	16 4 58.00
23	15 55 28.70	26.35	20 22 33.5	26.5	10.558	31.21	13 26.03	14.69	9.52	16 8 54.56
24	15 59 42.47	40.16	20 34 51.3	44.7	10.590	30.26	13 8.81	14.88	9.63	16 12 51.11
25	16 3 56.99	54.73	20 46 46.2	40.0	10.621	29.30	12 50.84	15.06	9.74	16 16 47.67
26	16 8 12.27	10.06	20 58 17.7	11.8	10.652	28.32	12 32.13	15.23	9.84	16 20 44.23
27	16 12 28.28	26.12	21 9 25.6	20.0	10.682	27.33	12 12.68	15.40	9.94	16 24 40.79
28	16 16 45.00	42.90	21 20 9.6	4.3	10.712	26.33	11 52.51	15.56	10.03	16 28 37.34
29	16 21 2.43	0.38	21 30 29.4	24.5	10.741	25.32	11 31.64	15.72	10.12	16 32 33.90
30	16 25 20.55	18.56	21 40 24.7	20.2	10.769	24.29	11 10.08	15.87	10.21	16 36 30.46
Dec. 1	16 29 39.35	37.42	21 49 55.3	51.1	10.796	23.25	10 47.85	16.02	10.29	16 40 27.01
2	16 33 58.80	56.93	21 59 0.8	57.0	10.823	22.20	10 24.96	16.16	10.37	16 44 23.57
3	16 38 18.89	17.09	22 7 40.9	37.4	10.849	21.14	10 1.41	16.30	10.45	16 48 20.13
4	16 42 39.60	37.87	22 15 55.5	52.3	10.875	20.07	9 37.25	16.43	10 52	16 52 16.69
5	16 46 60.90	59.24	22 23 44.3	41.4	10.900	18.99	9 12.51	16.56	10.59	16 56 13.25
6	16 51 22.77	21.19	22 31 7.0	4.4	10.923	17.90	8 47.19	16.69	10.66	17 0 9.80
7	16 55 45.19	43.69	22 38 3.4	1.1	10.945	16.79	8 21.32	16.81	10.73	17 4 6.36
8	17 0 8.12	6.70	22 44 33.1	31.1	10.966	15.68	7 54.94	16.93	10.79	17 8 2.92
9	17 4 31.53	30.19	22 50 36.0	34.2	10.985	14.56	7 28.09	17.04	10.85	17 11 59.48
10	17 8 55.38	54.12	22 56 11.9	10.3	11.003	13.43	7 0.80	17·15	10.90	17 15 56.04
11	17 13 19.65	18.48	23 1 20.5	19.2	11.020	13.29	6 33.08	17.26	10.96	17 19 52.59
12	17 17 44.30	43.21	23 6 1.6	0.5	11.035	11.14	6 4.97	17.36	11.01	17 23 49.15
13	17 22 9.30	8.29	23 10 15.2	14.3	11.049	9.99	5 36.52	17.46	11.06	17 27 45.71
14	17 26 34.61	33.68	23 14 1.2	0.5	11.061	8.84	5 7.76	17.55	11.10	17 31 42.27
15	17 30 60.19	59.35	23 17 19.4	18.8	11.071	7.68	4 38.73	17.64	11.14	17 35 38.83
16	17 35 26.00	25.25	23 20 9.6	9.2	11.080	6.51	4 9.47	17.73	11.17	17 39 35.38
17	17 39 52.00	51.34	23 22 31.7	31.4	11.087	5.34	3 40.02	17.82	11.20	17 43 31.94
18	17 44 18.18	17.61	23 24 25.7	25.5	11.093	4.16	3 10.39	17.90	11.22	17 47 28.50
19	17 48 44.49	44.02	23 25 51.4	51.3	11.098	2.99	2 40.63	17.97	11.24	17 51 25.06
20	17 53 10.89	10.51	23 26 48.9	48.8	11.101	1.81	2 10.78	18.04	11.25	17 55 21.62
21	17 57 37.35	37.06	23 27 18.1	18.1	11.102	0.63	1 40.87	18.11	11.26	17 59 18.18
22	18 2 3.84	3.64	23 27 19.0	19.0	11.103	0.55	1 10.93	18.17	11.26	18 3 14.73
23	18 6 30.32	30.21	23 26 51.7	51.7	11.102	1.73	0 40.98	18.22	11.26	18 7 11.29
24	18 10 56.78	56.76	23 25 56.1	56.1	11.101	2.91	− 0 11.06	18.27	11.25	18 11 7.85
25	18 15 23.17	23.25	23 24 32.2	32.1	11.097	4.09	+ 0 18.77	18.31	11.24	18 15 4.41
26	18 19 49.46	49.63	23 22 40.0	39.9	11.093	5.26	0 48.51	18.35	11.23	18 19 0.97
27	18 24 15.63	15.89	23 20 19.7	19.5	11.088	6.43	1 18.13	18.37	11.21	18 22 57.53
28	18 28 41.64	41.99	23 17 31.3	31.0	11.081	7.60	1 47.60	18.39	11.19	18 26 54.08
29	18 33 7.47	7.91	23 14 14.8	14.4	11.073	8.77	2 16.88	18.41	11.16	18 30 50.64
30	18 37 33.08	33.61	23 10 30.4	29.9	11.063	9.93	2 45.94	18.42	11.13	18 34 47.20
31	18 41 58.45	59.07	23 6 18.3	17.7	11.052	11.09	3 14.76	18.42	11.10	18 38 43.76
32	18 46 23.56	24.27	−23 1 38.5	37.7	11.040	12.24	+ 3 43.31	16 18.42	1 11.06	18 42 40.32

NOTE.—For *Mean* interval of Semidiameter passing the Meridian, subtract 0s.19 from the Sidereal Interval.

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Date. 1871.	Mean Time of Meridian Transit.	Hourly Diff.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date. 1871.	Mean Time of Meridian Transit.	Hourly Diff.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
Jan. 1	8 22.45	1.799	62.67	16 .. 19	I.	Mar. 1	8 4.23	2.128	68.01	38 .. 41	I.
2	9 6.53	1.880	63.92	20 .. 23	I.	2	8 55.91	2.172	68.61	45 .. 48	I.
3	9 52.78	1.975	65.35	27 .. 30	I.	3	9 48.19	2.180	68.65	56 .. 59	I.
4	10 41.29	2.066	66.74	32 .. 35	I.	4	10 40.33	2.162	68.29	64 .. 67	I.
5	11 31.77	2.136	67.77	36 .. 39	I.	5	11 31.83	2.128	67.75	71 .. 74	I.
6	12 23.51	2.167	68.24	43 .. 46	II.	6	12 22.50	2.098	67.25	81 .. 84	II.
7	13 15.48	2.157	68.13	53 .. 56	II.	7	13 12.64	2.086	67.08	84 .. 87	II.
8	14 6.83	2.119	67.55	62 .. 65	II.	8	14 2.84	2.103	67.40	95 .. 98	II.
9	14 57.00	2.063	66.79	69 .. 72	II.	9	14 53.84	2.153	68.25	103 .. 106	II.
10	15 45.93	2.017	66.13	78 .. 81	II.	10	15 46.43	2.233	69.52	109 .. 112	II.
11	16 34.02	1.998	65.85	84 .. 87	II.	11	16 41.15	2.327	70.99	115 .. 118	II.
12	17 22.03	2.013	66.13	92 .. 95	II.	12	17 38.06	2.410	72.26	124 .. 127	II.
13	18 10.92	2.071	67.07	102 .. 105	II.	13	18 36.55	2.455	72.90	130 .. 133	II.
14	19 1.73	2.173	68.61	107 .. 110	II.	14	19 35.45	2.439	72.64	139 .. 142	II.
15	19 55.44	2.306	70.58	112 .. 115	II.	15	20 33.15	2.360	71.42	146 .. 149	II.
16	20 52.46	2.444	72.55	122 .. 125	II.	16	21 28.39	2.238	69.53	153 .. 156	II.
17	21 52.48	2.547	73.95		II.	17	22 20.47	2.103	67.41		II.
18	22 54.12	2.572	74.27		II.	18	23 9.40	1.978	65.43		II.
19	23 55.25	2.505	73.28		II.	19	23 55.64	1.880	63.83		II.
21	0 53.81	2.366	71.25		I.	21	0 39.90	1.814	62.77		I.
22	1 48.54	2.194	68.74		I.	22	1 22.99	1.783	62.30		I.
23	2 39.17	2.030	66.28		I.	23	2 5.72	1.786	62.38		I.
24	3 26.22	1.898	64.25	170 .. 173	I.	24	2 48.85	1.815	62.95	14 .. 17	I.
25	4 10.56	1.806	62.82	3 .. 6	I.	25	3 33.00	1.868	63.91	20 .. 23	I.
26	4 53.23	1.757	62.08	6 .. 9	I.	26	4 18.65	1.938	65.08	27 .. 30	I.
27	5 35.25	1.751	62.00	10 .. 13	I.	27	5 6.05	2.012	66.30	31 .. 34	I.
28	6 17.56	1.781	62.50	14 .. 17	I.	28	5 55.14	2.077	67.34	36 .. 39	I.
29	7 1.00	1.844	63.52	19 .. 22	I.	29	6 45.57	2.121	68.04	41 .. 44	I.
30	7 46.25	1.930	64.86	25 .. 28	I.	30	7 36.78	2.141	68.30	51 .. 54	I.
31	8 33.69	2.024	66.28	30 .. 33	I.	31	8 28.16	2.137	68.18	60 .. 63	I.
Feb. 1	9 23.35	2.110	67.54	35 .. 38	I.	Apr. 1	9 19.26	2.119	67.84	67 .. 70	I.
2	10 14.78	2.169	68.38	40 .. 43	I.	2	10 9.89	2.103	67.54	75 .. 78	I.
3	11 7.18	2.190	68.64	50 .. 53	I.	3	11 0.31	2.102	67.47	83 .. 86	I.
4	11 59.59	2.171	68.34	60 .. 63	I.	4	11 50.99	2.127	67.83	92 .. 95	I.
5	12 51.20	2.127	67.65	67 .. 70	II.	5	12 42.67	2.185	68.72	101 .. 104	II.
6	13 41.63	2.077	66.91	73 .. 76	II.	6	13 36.11	2.273	70.07	107 .. 110	II.
7	14 30.97	2.039	66.37	83 .. 86	II.	7	14 31.86	2.375	71.65	112 .. 115	II.
8	15 19.71	2.029	66.28	87 .. 90	II.	8	15 30.03	2.467	73.05	122 .. 125	II.
9	16 8.65	2.056	66.77	98 .. 101	II.	9	16 29.93	2.514	73.81	128 .. 131	II.
10	16 58.70	2.121	67.84	106 .. 109	II.	10	17 30.17	2.492	73.54	135 .. 138	II.
11	17 50.74	2.221	69.37	110 .. 113	II.	11	18 29.03	2.402	72.23	144 .. 147	II.
12	18 45.42	2.336	71.07	118 .. 121	II.	12	19 25.12	2.267	70.18	152 .. 155	II.
13	19 42.75	2.437	72.53	125 .. 128	II.	13	20 17.72	2.117	67.86	156 .. 159	II.
14	20 42.01	2.490	73.23	133 .. 136	II.	14	21 6.84	1.981	65.68	163 .. 166	II.
15	21 41.70	2.470	72.87		II.	15	21 53.04	1.875	63.92		II.
16	22 40.03	2.379	71.49		II.	16	22 37.10	1.806	62.71		II.
17	23 35.56	2.244	69.45		II.	17	23 19.90	1.769	62.09		II.
19	0 27.64	2.097	67.21		I.	19	0 2.27	1.767	62.07		II.
20	1 16.31	1.964	65.17		I.	20	0 44.97	1.796	62.56		I.
21	2 2.15	1.863	63.60		I.	21	1 28.65	1.847	63.44		I.
22	2 46.04	1.800	62.62	4 .. 7	I.	22	2 13.76	1.916	64.57	24 .. 27	I.
23	3 28.84	1.773	62.26	9 .. 12	I.	23	3 0.53	1.983	65.75	30 .. 33	I.
24	4 11.44	1.783	62.48	11 .. 14	I.	24	3 48.87	2.043	66.77	34 .. 37	I.
25	4 54.67	1.824	63.23	18 .. 21	I.	25	4 38.45	2.084	67.45	39 .. 42	I.
26	5 39.20	1.892	64.36	22 .. 25	I.	26	5 28.71	2.099	67.74	46 .. 49	I.
27	6 25.58	1.974	65.66	28 .. 31	I.	27	6 19.04	2.091	67.64	58 .. 61	I.
28	7 13.97	2.057	66.94	33 .. 36	I.	28	7 9.01	2.071	67.31	64 .. 67	I.
29	8 4.23	2.128	68.01	38 .. 41	I.	29	7 58.48	2.053	66.98	70 .. 73	I.
30	8 55.91	2.172	68.61	45 .. 48	I.	30	8 47.68	2.051	66.90	81 .. 84	I.
31	9 48.19	2.180	68.65	56 .. 59	I.	31	9 37.17	2.079	67.26	85 .. 88	I.
32	10 40.33	2.162	68.29	64 .. 67	I.	32	10 27.76	2.143	68.20	96 .. 99	I.

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Date. 1871.	Mean Time of Meridian Transit.	Diff. for 1h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date. 1871.	Mean Time of Meridian Transit.	Diff. for 1h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
May 1	9 37.17	2.079	67.26	85 .. 88	I.	July 1	11 41.21	2.701	76.35	132 .. 135	I.
2	10 27.76	2.143	68.20	96 .. 99	I.	2	12 45.87	2.664	75.84	141 .. 144	II.
3	11 20.34	2.246	69.71	104 .. 107	I.	3	13 48.29	2.522	73.84	150 .. 153	II.
4	12 15.75	2.376	71.64	109 .. 112	II.	4	14 46.49	2.325	71.04	156 .. 159	II.
5	13 14.36	2.507	73.57	116 .. 119	II.	5	15 39.88	2.128	68.11	163 .. 166	II.
6	14 15.76	2.598	74.96	125 .. 128	II.	6	16 28.90	1.965	65.65	168 .. 171	II.
7	15 18.49	2.611	75.19	132 .. 135	II.	7	17 14.58	1.850	63.81	1 .. 4	II.
8	16 20.39	2.530	74.11	141 .. 144	II.	8	17 58.10	1.784	62.73	5 .. 8	II.
9	17 19.40	2.379	71.96	148 .. 151	II.	9	18 40.59	1.764	62.39	9 .. 12	II.
10	18 14.37	2.202	69.29	154 .. 157	II.	10	19 23.08	1.783	62.68	12 .. 15	II.
11	19 5.15	2.034	66.70	160 .. 163	II.	11	20 6.43	1.834	63.47	18 .. 21	II.
12	19 52.27	1.900	64.54	167 .. 170	II.	12	20 51.30	1.907	64.59	24 .. 27	II.
13	20 36.65	1.807	62.98	173 .. 2	II.	13	21 38.04	1.987	65.79		II.
14	21 19.34	1.757	62.08	4 .. 7	II.	14	22 26.61	2.057	66.83		II.
15	22 1.28	1.745	61.83		II.	15	23 16.55	2.098	67.45		II.
16	22 43.38	1.768	62.16		II.	17	0 7.06	2.104	67.52		II.
17	23 26.37	1.818	62.96		II.	18	0 57.27	2.074	67.07		I.
19	0 10.81	1.887	64.08		I.	19	1 46.46	2.023	66.29		I.
20	0 57.00	1.969	65.29		I.	20	2 34.33	1.966	65.46	72 .. 75	I.
21	1 44.86	2.027	66.37		I.	21	3 21.03	1.926	64.90	80 .. 83	I.
22	2 34.12	2.071	67.11	37 .. 40	I.	22	4 7.10	1.917	64.80	84 .. 87	I.
23	3 24.05	2.084	67.39	43 .. 46	I.	23	4 53.37	1.947	65.31	94 .. 97	I.
24	4 13.96	2.069	67.24	53 .. 56	I.	24	5 40.91	2.023	66.54	102 .. 105	I.
25	5 3.25	2.037	66.77	62 .. 65	I.	25	6 30.82	2.145	68.44	108 .. 111	I.
26	5 51.71	2.003	66.26	68 .. 71	I.	26	7 24.14	2.305	70.82	112 .. 115	I.
27	6 39.50	1.983	65.94	78 .. 81	I.	27	8 21.50	2.473	73.23	121 .. 124	I.
28	7 27.14	1.992	66.07	83 .. 86	I.	28	9 22.56	2.605	75.08	128 .. 131	I.
29	8 15.43	2.042	66.79	91 .. 94	I.	29	10 25.88	2.650	75.66	136 .. 139	I.
30	9 5.46	2.136	68.18	100 .. 103	I.	30	11 28.97	2.587	74.74	145 .. 148	I.
31	9 58.27	2.273	70.22	107 .. 110	I.	31	12 29.44	2.440	72.63	153 .. 156	II.
June 1	10 54.76	2.438	72.61	110 .. 113	I.	Aug. 1	13 25.84	2.257	69.91	157 .. 160	II.
2	11 55.21	2.593	74.82	122 .. 125	I.	2	14 17.85	2.083	67.33	166 .. 169	II.
3	12 58.74	2.685	76.14	128 .. 131	II.	3	15 6.11	1.945	65.23	172 .. 2	II.
4	14 3.27	2.669	75.98	136 .. 139	II.	4	15 51.59	1.853	63.80	3 .. 6	II.
5	15 6.07	2.547	74.31	145 .. 148	II.	5	16 35.40	1.806	63.06	8 .. 11	II.
6	16 5.02	2.360	71.64	153 .. 156	II.	6	17 18.60	1.800	63.01	11 .. 14	II.
7	16 59.25	2.161	68.69	157 .. 160	II.	7	18 2.11	1.831	63.52	16 .. 19	II.
8	17 48.95	1.988	66.03	165 .. 168	II.	8	18 46.70	1.889	64.44	21 .. 24	II.
9	18 35.02	1.860	63.97	171 .. 174	II.	9	19 32.88	1.961	65.57	28 .. 31	II.
10	19 18.61	1.780	62.62	2 .. 5	II.	10	20 20.85	2.034	66.55	33 .. 36	II.
11	20 0.81	1.745	62.00	6 .. 9	II.	11	21 10.38	2.089	67.46	37 .. 40	II.
12	20 42.69	1.752	62.05	10 .. 13	II.	12	22 0.89	2.113	67.78		II.
13	21 25.15	1.791	62.65	14 .. 17	II.	13	22 51.57	2.103	67.56		II.
14	22 8.87	1.857	63.66		II.	14	23 41.64	2.065	66.93		II.
15	22 54.37	1.935	64.89		II.	16	0 30.60	2.014	66.12		I.
16	23 41.74	2.011	66.08		II.	17	1 18.33	1.965	65.40		I.
18	0 30.75	2.068	66.96		I.	18	2 5.12	1.940	65.04		I.
19	1 20.74	2.091	67.35		I.	19	2 51.72	1.948	65.19	91 .. 94	I.
20	2 10.86	2.080	67.23		I.	20	3 38.93	1.989	66.00	98 .. 101	I.
21	3 0.38	2.042	66.69	59 .. 62	I.	21	4 27.75	2.083	67.46	107 .. 110	I.
22	3 48.79	1.992	65.98	67 .. 70	I.	22	5 19.18	2.209	69.41	110 .. 113	I.
23	4 36.07	1.951	65.30	73 .. 76	I.	23	6 13.91	2.354	71.60	118 .. 121	I.
24	5 22.62	1.932	65.11	82 .. 85	I.	24	7 12.05	2.485	73.49	126 .. 129	I.
25	6 9.10	1.950	65.41	87 .. 90	I.	25	8 12.76	2.561	74.54	134 .. 137	I.
26	6 56.57	2.014	66.40	96 .. 99	I.	26	9 14.33	2.551	74.34	141 .. 144	I.
27	7 46.15	2.127	68.12	104 .. 107	I.	27	10 14.59	2.457	72.91	149 .. 152	I.
28	8 39.00	2.285	70.46	109 .. 112	I.	28	11 11.87	2.311	70.72	155 .. 158	I.
29	9 35.96	2.464	73.04	115 .. 118	I.	29	12 5.43	2.154	68.34	163 .. 166	I.
30	10 37.09	2.622	75.26	124 .. 127	I.	30	12 55.40	2.016	66.23	169 .. 172	II.
31	11 41.21	2.701	76.35	132 .. 135	I.	31	13 42.46	1.913	64.63	2 .. 5	II.

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Date 1871.	Mean Time of Moon's Transit	Diff. for 1h of Long.	Sidereal Time of Semid. passing Meridian	Stars		Moon's Limb
	h m s	m	s			
Sept 1	14 [illegible]	[illegible]	[illegible]	5	8	II
2	15 [illegible]	[illegible]	[illegible]	9	12	II
3	15 [illegible]	[illegible]	[illegible]	11	16	II
4	16 [illegible]	[illegible]	[illegible]	19	22	II
5	17 [illegible]	[illegible]	[illegible]	25	[illegible]	II
6	18 [illegible]	[illegible]	[illegible]	[illegible]	31	II
7	19 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	II
8	19 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	II
9	20 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	II
10	21 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	II
11	22 [illegible]	[illegible]	[illegible]			II
12	23 [illegible]	[illegible]	[illegible]			II
13	23 [illegible]	[illegible]	[illegible]			II
15	0 47 [illegible]	[illegible]	[illegible]			I
16	1 34 [illegible]	2 17	[illegible]			I
17	2 [illegible]	[illegible]	[illegible]			I
18	3 [illegible]	[illegible]	[illegible]	[illegible]	111	I
19	4 [illegible]	[illegible]	[illegible]	114	117	I
20	5 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I
21	6 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I
22	7 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I
23	8 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I
24	9 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I
25	9 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I
26	10 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I
27	11 [illegible]	[illegible]	[illegible]	[illegible]	2	I
28	12 [illegible]	[illegible]	[illegible]	1	6	II
29	13 [illegible]	[illegible]	[illegible]	[illegible]	11	II
30	13 [illegible]	[illegible]	[illegible]	11	14	II
Oct 1	14 [illegible]	[illegible]	[illegible]	17	[illegible]	II
2	15 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	II
3	16 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	II
4	16 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	II
5	17 44 [illegible]	[illegible]	[illegible]	[illegible]	41	II
6	18 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	II
7	19 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	II
8	20 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	II
9	21 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	II
10	21 [illegible]	[illegible]	[illegible]			II
11	22 [illegible]	[illegible]	[illegible]			II
[illegible]	23 [illegible]	[illegible]	[illegible]			II
14	0 [illegible]	[illegible]	[illegible]			I
15	1 [illegible]	[illegible]	[illegible]			I
16	2 [illegible]	[illegible]	[illegible]			I
17	3 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I
18	4 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I
19	5 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I
20	6 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I
21	6 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I
22	7 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I
23	8 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I
24	9 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I
25	10 [illegible]	[illegible]	[illegible]	[illegible]		I
26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I
27	11 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I
28	12 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	II
29	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	II
30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	II
31	14 [illegible]	[illegible]	[illegible]	31	[illegible]	II
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	II

Date 1871.	Mean Time of Moon's Transit	Diff. for 1h of Long.	Sidereal Time of Semid. passing Meridian	Stars		Moon's Limb
	h m	m	s			
Nov 1	15 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	16 [illegible]	[illegible]	[illegible]	41	44	[illegible]
3	17 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	18 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	18 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	19 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	20 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	21 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	22 [illegible]	[illegible]	[illegible]			[illegible]
10	22 [illegible]	[illegible]	[illegible]			[illegible]
11	23 [illegible]	[illegible]	[illegible]			[illegible]
13	0 [illegible]	[illegible]	[illegible]			[illegible]
14	1 [illegible]	[illegible]	[illegible]			[illegible]
15	2 [illegible]	[illegible]	[illegible]			[illegible]
16	3 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	4 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	5 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	6 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	7 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	8 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	8 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	9 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	10 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	11 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	11 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	12 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	13 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	14 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Dec 1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	16 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	17 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	18 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	21 [illegible]	[illegible]	[illegible]			[illegible]
9	22 [illegible]	[illegible]	[illegible]			[illegible]
10	[illegible]	[illegible]	[illegible]			[illegible]
12	[illegible]	[illegible]	[illegible]			[illegible]
13	1 [illegible]	[illegible]	[illegible]			[illegible]
14	[illegible]	[illegible]	[illegible]			[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	11 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

MEAN PLACES FOR 1871.0.

No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
1	*d* Piscium	6.5	0 13 57.70	+3.086	+ 7 28 26.0	+20.06
2	44 Piscium	6	0 18 47.48	3.075	+ 1 13 31.6	19.99
3	10 Ceti	6	0 20 0.45	3.077	— 0 45 52.0	19.98
4	δ Piscium	4.5	0 41 59.45	3.108	+ 6 52 57.9	19.71
5	ε PISCIUM	4	0 56 14.99	3.109	7 11 42.6	19.48
6	ζ^1 Piscium	5.4	1 6 59.56	+3.130	+ 6 53 33.4	+19.14
7	μ Piscium	5	1 23 25.62	3.138	5 28 36.8	18.57
8	η PISCIUM	4.3	1 24 34.92	3.199	14 40 48.9	18.72
9	ν Piscium	5.4	1 34 43.16	3.118	4 50 0.3	18.34
10	ο PISCIUM	4	1 38 35.07	3.162	8 30 27.3	18.27
11	ξ^1 CETI	4.5	2 6 9.83	+3.169	+ 8 14 25.4	+17.08
12	ξ^2 Ceti	4	2 21 18.18	3.184	7 52 50.2	16.37
13	μ Ceti	4	2 37 58.27	3.234	9 34 4.1	15.43
14	π Arietis	6.5	2 42 5.80	3.338	16 55 36.4	15.28
15	ε Arietis	4.5	2 51 50.40	3.421	20 49 22.1	14.68
16	λ Ceti	6.5	2 52 48.52	+3.215	+ 8 23 32.7	+14.63
17	δ Arietis	4.5	3 4 15.37	3.421	19 14 13.4	13.93
18	ζ ARIETIS	4.5	3 7 29.39	3.437	20 33 53.6	13.65
19	*f* Tauri	4	3 23 45.33	3.306	12 29 32.8	12.64
20	η TAURI	3	3 39 49.15	3.554	23 42 15.1	11.47
21	*e* Tauri	5	3 41 11.87	+3.281	+10 44 38.9	+11.37
22	λ Tauri	3.4	3 53 32.13	3.317	12 7 26.1	10.52
23	A^1 Tauri	5.4	3 57 4.26	3.537	21 43 37.5	10.19
24	γ TAURI	4	4 12 27.24	3.407	15 18 50.9	9.07
25	υ^1 Tauri	5.4	4 18 35.47	3.582	22 31 7.9	8.56
26	ε TAURI	4.3	4 21 5.15	+3.495	+18 53 32.2	+ 8.38
27	α TAURI	1	4 28 31.23	3.436	16 14 52.5	7.63
28	τ Tauri	4.5	4 34 30.30	3.594	22 42 26.2	7.31
29	ι Tauri	5	4 55 23.24	3.583	21 24 11.7	5.55
30	11 ORIONIS	5	4 57 12.00	3.425	15 13 20.1	5.42
31	ο Tauri	6	5 19 53.26	+3.603	+21 49 27.7	+ 3.52
32	119 Tauri	6.5	5 24 39.15	3.517	18 29 44.9	3.09
33	ζ Tauri	3.4	5 29 56.25	3.586	21 3 41.4	2.60
34	χ Orionis	5.4	5 46 44.63	3.552	20 14 58.7	+ 1.06
35	ν Orionis	5.4	6 0 12.48	3.428	14 46 52.8	— 0.04
36	η Geminorum	3.4	6 7 5.46	+3.624	+22 32 29.7	— 0.63
37	μ GEMINORUM	3	6 15 9.39	3.633	22 34 38.6	1.43
38	γ GEMINORUM	2.3	6 30 15.58	3.469	16 30 25.8	2.67
39	ξ Geminorum	4.3	6 38 3.08	3.373	13 1 55.9	3.48
40	ζ Geminorum	4	6 56 27.46	3.566	20 45 25.9	4.91
41	λ Geminorum	4.3	7 10 40.82	+3.457	+16 46 15.4	— 6.09
42	δ GEMINORUM	3.4	7 12 25.07	3.591	22 13 3.5	6.22
43	63 Geminorum	6.5	7 20 4.94	3.570	21 42 25.6	6.94
44	6 Canis Minoris	6.5	7 22 37.09	+3.347	+12 16 18.3	— 7.08

MEAN PLACES FOR 1871.0.

No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
45	68 Geminorum .	6.5	7 26 14.72	+3.431	+16 6 8.1	— 7.33
46	*f* Geminorum .	6	7 32 1.62	3.475	17 57 57.1	7.83
47	1 Cancri . . .	6	7 49 40.03	3.418	16 7 58.2	9.23
48	5 Cancri . . .	6	7 54 9.07	3.428	16 48 32.6	9.54
49	8 Cancri . . .	6	7 57 53.32	3.351	13 29 1.8	9.92
50	μ^2 Cancri . . .	5	8 0 10.31	+3.542	+21 57 21.7	—10.06
51	12 Cancri . . .	6	8 1 29.81	3.361	14 0 50.9	10.19
52	ζ^1 Cancri . . .	5.4	8 4 48.78	3.453	18 2 5.4	10.50
53	d^1 Cancri . . .	6	8 15 58.56	3.447	18 44 40.3	11.22
54	29 Cancri . . .	6	8 21 25.45	3.358	14 38 7.9	11.67
55	*θ* Cancri . . .	6	8 24 14.34	+3.432	+18 31 43.1	—11.86
56	c^1 Cancri . . .	6	8 30 5.83	3.257	10 6 11.3	12.22
57	39 Cancri . . .	6	8 32 40.94	3.460	20 27 40.2	12.41
58	*δ* Cancri . . .	4	8 37 21.15	3.422	18 37 35.9	12.95
59	A^2 Cancri . . .	6	8 39 51.65	3.296	12 34 53.2	12.94
60	*α* Cancri . . .	4	8 51 25.85	+3.291	+12 21 19.8	—13.67
61	*κ* CANCRI . . .	5	9 0 45.49	3.255	11 11 9.6	14.21
62	π^2 Cancri . . .	6	9 8 6.43	3.322	15 28 32.2	14.65
63	*ω* Leonis . . .	6	9 21 32.96	3.221	9 36 59.8	15.49
64	*h* Leonis . . .	6	9 25 2.63	3.226	10 16 58.6	15.69
65	10 Leonis . . .	5.6	9 30 24.08	+3.174	+ 7 24 48.8	—15.91
66	*ο* Leonis . . .	4.3	9 34 16.22	3.226	10 28 39.9	16.19
67	B. A. C. 3336 .	5.6	9 39 21.75	3.169	7 18 12.4	16.40
68	*π* Leonis . . .	5	9 53 23.81	3.180	8 39 43.0	17.10
69	*α* LEONIS . .	1.2	10 1 30.04	3.203	12 35 49.1	17.41
70	43 Leonis . . .	6	10 16 15.48	+3.144	+ 7 11 48.4	—18.13
71	45 Leonis . . .	6	10 20 50.05	3.177	10 25 7.4	18.22
72	*ρ* LEONIS . .	4	10 26 1.09	3.166	9 58 11.0	18.39
73	34 Sextantis . .	6	10 35 57.75	3.104	4 15 21.6	18.73
74	*l* LEONIS . .	5	10 42 28.49	3.160	11 13 38.7	18.92
75	55 Leonis . . .	6	10 49 4.37	+3.092	+ 1 25 29.2	—19.10
76	*d* Leonis . . .	5	10 53 53.88	3.103	4 18 33.4	19.28
77	*c* Leonis . . .	5	10 54 3.63	3.118	6 47 37.5	19.27
78	*χ* Leonis . . .	5	10 58 21.76	3.101	8 1 56.6	19.42
79	p^5 Leonis . . .	5	11 7 9.82	3.085	+ 0 37 54.3	19.57
80	*φ* Leonis . . .	5.4	11 10 6.23	+3.053	— 2 56 49.4	—19.63
81	*σ* Leonis . . .	4	11 14 29.04	3.098	+ 6 44 8.7	19.68
82	79 Leonis . . .	6	11 17 25.20	3.084	+ 2 6 54.8	19.74
83	*υ* LEONIS . .	5.4	11 30 20.68	3.072	— 0 6 41.5	19.83
84	*β* Virginis . .	3.4	11 42 58.58	3.127	+ 2 29 28.9	20.29
85	10 Virginis . .	6	12 3 4.66	+3.074	+ 2 37 18.6	—20.28
86	*η* VIRGINIS . .	3.4	12 13 18.41	3.068	+ 0 3 1.8	20.03
87	*q* Virginis . .	6	12 27 7.39	3.092	— 8 44 24.1	19.89
88	*f* Virginis . .	6	12 30 8.85	+3.086	— 5 7 19.5	—19.97

MEAN PLACES FOR 1871.0.

No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
89	χ Virginis	5	12 32 35.73	+3.095	— 7 17 5.4	—19.90
90	γ Virginis	3.2	12 35 7.54	3.040	0 44 30.5	19.84
91	28 Virginis	6	12 35 17.68	3.100	6 47 22.4	19.84
92	38 Virginis	6	12 46 35.03	3.073	2 51 6.1	19.67
93	ψ Virginis	5	12 47 38.86	3.117	8 50 16.0	19.64
94	*k* Virginis	6	12 53 1.02	+3.089	— 3 6 51.4	—19.49
95	48 Virginis	6	12 57 15.63	3.086	2 58 4.1	19.46
96	θ VIRGINIS	4.5	13 3 16.38	3.101	4 50 58.0	19.32
97	α VIRGINIS	1	13 18 23.99	3.153	10 29 13.0	18.91
98	l^2 Virginis	5	13 25 15.75	3.117	5 35 20.5	18.74
99	*h* Virginis	5	13 26 10.57	+3.153	— 9 29 58.4	—18.69
100	*m* Virginis	6	13 34 50.61	3.143	8 3 5.6	18.35
101	83 Virginis	6	13 37 32.50	3.228	15 31 49.6	18.33
102	86 Virginis	6	13 39 4.06	3.188	11 46 45.1	18.21
103	89 Virginis	5	13 42 51.95	3.249	17 29 26.6	18.12
104	94 Virginis	6	13 59 28.10	+3.169	— 8 16 29.6	—17.37
105	κ Virginis	4.5	14 6 1.13	3.197	9 40 23.5	17.09
106	λ Virginis	5.4	14 12 8.01	3.240	12 46 34.1	16.79
107	2 Libræ	6	14 16 29.23	3.219	11 7 26.1	16.70
108	5 Libræ	6	14 38 51.18	3.300	14 54 53.1	15.46
109	α^2 LIBRÆ	2.3	14 43 44.71	+3.307	—15 30 13.7	—15.21
110	ι^1 Libræ	5.4	15 4 52.39	3.410	19 18 5.6	13.90
111	ζ^1 Libræ	4	15 20 59.15	3.377	16 15 53.8	12.86
112	γ Libræ	4.5	15 28 18.73	3.346	14 21 26.0	12.31
113	θ Libræ	5.4	15 46 29.11	3.412	16 20 55.2	10.91
114	δ SCORPII	2.3	15 52 42.53	+3.536	—22 15 6.4	—10.57
115	β^1 SCORPII	2	15 57 56.31	3.477	19 27 0.1	10.20
116	ν^2 Scorpii	4	16 4 30.10	3.480	19 7 22.5	9.66
117	σ Scorpii	3.4	16 13 21.06	3.637	25 16 50.1	9.00
118	ψ Ophiuchi	5	16 16 33.41	3.503	19 43 59.3	8.80
119	χ Ophiuchi	6	16 19 33.01	+3.470	—18 9 39.8	— 8.50
120	α SCORPII	1.2	16 21 30.08	3.669	26 8 35.0	8.38
121	ω Ophiuchi	5	16 24 29.59	3.548	21 11 18.1	8.04
122	B. A. C. 5579	5	16 34 6.87	3.463	17 29 23.4	7.31
123	20 Ophiuchi	5	16 42 41.96	3.318	10 33 8.5	6.71
124	29 Ophiuchi	6	16 54 18.54	+3.504	—18 41 31.9	— 5.66
125	η Ophiuchi	2.3	17 2 58.90	3.436	15 33 44.6	4.82
126	ν Serpentis	5.4	17 13 34.36	3.372	12 42 47.0	4.01
127	θ Ophiuchi	3.4	17 14 5.36	3.681	24 52 5.4	4.04
128	ξ Serpentis	4.3	17 30 12.06	3.434	15 18 52.6	2.65
129	ο Serpentis	5.4	17 34 9.92	+3.370	—12 48 13.4	— 2.28
130	4 Sagittarii	5	17 51 54.99	3.661	23 48 4.6	— 0.72
131	μ^1 SAGITTARII	4	18 6 2.93	+3.586	—21 5 23.1	+ 0.53

MEAN PLACES FOR 1871.0.

No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
132	21 Sagittarii . .	5	18 17 39.99	+3.574	−20 36 29.1	+ 1.53
133	λ Sagittarii . .	3	18 20 0.59	3.706	25 29 26.5	1.52
134	B. A. C. 6279 .	5.4	18 21 50.75	3.419	14 38 45.2	1.89
135	24 Sagittarii . .	6	18 26 0.76	3.667	24 7 30.5	2.27
136	ν^1 Sagittarii . .	5	18 46 22.79	3.626	22 54 2.2	4.04
137	ξ^2 Sagittarii . .	4	18 50 1.88	+3.582	−21 16 24.8	+ 4.35
138	υ Sagittarii . .	4	18 56 57.03	3.599	21 55 39.0	4.91
139	π Sagittarii . .	3	19 2 5.39	3.573	21 13 32.8	5.38
140	*d* SAGITTARII .	5	19 10 5.15	3.513	19 10 44.9	6.08
141	ρ^1 Sagittarii . .	4	19 14 11.43	3.487	18 5 14.5	6.44
142	υ Sagittarii . .	5.4	19 14 20.36	+3.444	−16 11 42.7	+ 6.35
143	e^2 Sagittarii . .	5	19 35 8.32	3.438	16 25 24.2	8.13
144	*f* Sagittarii . .	5	19 38 50.13	3.506	20 4 6.3	8.36
145	*g* Sagittarii . .	6.5	19 50 38.02	3.409	15 49 53.7	9.26
146	63 Sagittarii . .	6	19 54 44.93	3.366	13 59 28.2	9.70
147	ξ^2 Capricorni .	6	20 5 14.66	+3.350	−12 59 31.0	+10.27
148	α^2 CAPRICORNI .	3.4	20 10 53.70	3.333	12 56 33.2	10.86
149	ρ Capricorni .	5	20 21 29.95	3.430	18 14 15.9	11.64
150	τ^2 Capricorni .	5	20 32 3.39	3.362	15 24 20.6	12.32
151	ε Aquarii . .	4.3	20 40 41.57	3.257	9 57 58.2	12.92
152	μ AQUARII . .	5.4	20 45 41.61	+3.240	− 9 27 55.1	+13.25
153	θ Capricorni .	4	20 58 41.64	3.384	17 44 35.2	14.07
154	ν Aquarii . .	4.5	21 2 33.80	3.274	11 53 32.2	14.35
155	β AQUARII . .	3	21 24 46.00	3.164	6 8 13.2	15.64
156	ξ AQUARII . .	5.4	21 30 52.96	3.198	8 25 52.3	15.94
157	λ Capricorni .	5.6	21 39 35.35	+3.238	−11 57 34.1	+16.43
158	θ AQUARII . .	4.5	22 10 1.51	3.170	8 25 28.2	17.78
159	ρ Aquarii . .	5.6	22 13 24.61	3.163	8 28 2.6	17.97
160	γ Aquarii . .	4.3	22 14 59.62	3.105	2 2 10.3	18.03
161	ζ Aquarii . .	3.4	22 22 11.29	3.091	0 40 44.0	18.31
162	σ Aquarii . .	5.4	22 23 49.05	+3.182	−11 20 11.3	+18.40
163	η AQUARII . .	4.3	22 28 43.60	3.084	0 46 53.3	18.44
164	κ Aquarii . .	5	22 31 4.46	3.113	4 53 33.0	18.48
165	78 Aquarii . .	6	22 47 51.17	3.128	− 7 53 17.4	19.09
166	β Piscium . .	5.4	22 57 18.86	3.057	+ 3 7 33.7	19.31
167	φ Aquarii . .	4.5	23 7 38.52	+3.113	− 6 44 37.7	+19.37
168	γ Piscium . .	4	23 10 28.66	3.110	+ 2 34 40.9	19.63
169	κ Piscium . .	5.4	23 20 19.26	3.079	0 32 58.8	19.66
170	ι PISCIUM . .	4.5	23 33 18.99	3.084	4 55 38.9	19.48
171	19 Piscium . .	6	23 39 48.28	3.067	2 46 20.2	20.00
172	26 Piscium . .	6	23 48 31.99	+3.069	+ 6 21 16.6	+20.06
173	ω PISCIUM . .	4	23 52 41.28	3.078	6 8 57.6	19.94
174	c^2 Piscium . .	6	23 55 54.32	+3.066	+ 7 46 9.6	+20.02

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.			FEBRUARY.			MARCH.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d									
1.0	14′ 46″.3	54′ 6″.1	−0″.17	14′ 57″.3	54′ 46″.5	+1″.00	14′ 59″.8	54′ 55″.5	+1″.19
1.5	14 46.1	54 5.2	+0.01	15 0.8	54 59.2	1.12	15 3.9	55 10.7	1.36
2.0	14 46.4	54 6.4	0.18	15 4.6	55 13.4	1.23	15 8.6	55 28.0	1.51
2.5	14 47.3	54 9.5	0.34	15 8.8	55 28.7	1.32	15 13.8	55 46.8	1.63
3.0	14 48.6	54 14.5	0.49	15 13.3	55 45.0	1.38	15 19.3	56 7.1	1.73
3.5	14 50.4	54 21.1	0.61	15 17.8	56 1.8	1.41	15 25.0	56 28.3	1.80
4.0	14 52.6	54 29.2	0.73	15 22.5	56 18.9	1.43	15 30.9	56 50.0	1.82
4.5	14 55.2	54 38.6	0.83	15 27.2	56 36.1	1.43	15 36.9	57 12.0	1.83
5.0	14 58.0	54 49.0	0.91	15 31.8	56 53.0	1.41	15 42.9	57 33.8	1.80
5.5	15 1.1	55 0.4	0.98	15 36.3	57 9.5	1.35	15 48.6	57 54.8	1.72
6.0	15 4.4	55 12.6	1.04	15 40.6	57 25.3	1.29	15 54.0	58 14.7	1.61
6.5	15 7.9	55 25.4	1.09	15 44.6	57 40.3	1.21	15 59.0	58 33.2	1.47
7.0	15 11.5	55 38.7	1.12	15 48.4	57 54.2	1.12	16 3.5	58 49.7	1.29
7.5	15 15.3	55 52.4	1.15	15 51.9	58 7.1	1.03	16 7.5	59 4.1	1.11
8.0	15 19.1	56 6.4	1.17	15 55.1	58 18.9	0.93	16 10.7	59 16.2	0.90
8.5	15 23.0	56 20.7	1.19	15 58.0	58 29.5	0.84	16 13.3	59 25.7	0.69
9.0	15 26.9	56 35.2	1.21	16 0.6	58 38.9	0.74	16 15.3	59 32.7	0.48
9.5	15 30.9	56 49.8	1.22	16 2.9	58 47.2	0.65	16 16.4	59 37.1	0.27
10.0	15 34.9	57 4.6	1.23	16 4.9	58 54.5	0.56	16 17.0	59 39.1	+0.07
10.5	15 39.0	57 19.6	1.24	16 6.5	59 0.6	0.47	16 16.9	59 38.8	−0.12
11.0	15 43.1	57 34.6	1.25	16 7.9	59 5.7	0.38	16 16.3	59 36.4	0.28
11.5	15 47.2	57 49.7	1.26	16 9.0	59 9.8	0.30	16 15.1	59 32.1	0.42
12.0	15 51.3	58 4.9	1.26	16 9.8	59 12.8	0.21	16 13.5	59 26.2	0.55
12.5	15 55.4	58 20.0	1.26	16 10.4	59 14.8	0.12	16 11.4	59 18.8	0.66
13.0	15 59.5	58 34.9	1.24	16 10.6	59 15.6	+0.02	16 9.1	59 10.3	0.76
13.5	16 3.5	58 49.6	1.21	16 10.5	59 15.2	−0.09	16 6.6	59 0.8	0.83
14.0	16 7.4	59 3.7	1.16	16 10.0	59 13.4	0.20	16 3.7	58 50.4	0.89
14.5	16 11.0	59 17.0	1.08	16 9.1	59 10.2	0.33	16 0.7	58 39.3	0.95
15.0	16 14.3	59 29.3	0.97	16 7.8	59 5.4	0.46	15 57.5	58 27.6	1.00
15.5	16 17.3	59 40.2	0.84	16 6.1	58 59.0	0.60	15 54.2	58 15.4	1.04
16.0	16 19.7	59 49.2	0.68	16 3.9	58 50.9	0.75	15 50.8	58 2.7	1.07
16.5	16 21.6	59 56.2	0.49	16 1.1	58 40.9	0.90	15 47.2	57 49.5	1.11
17.0	16 22.9	60 0.7	0.27	15 58.0	58 29.2	1.04	15 43.4	57 35.9	1.14
17.5	16 23.4	60 2.5	+0.03	15 54.3	58 15.9	1.18	15 39.6	57 21.9	1.17
18.0	16 23.0	60 1.2	−0.23	15 50.3	58 1.0	1.30	15 35.7	57 7.6	1.20
18.5	16 21.8	59 56.8	0.50	15 45.8	57 44.6	1.41	15 31.7	56 52.9	1.23
19.0	16 19.7	59 49.2	0.76	15 41.1	57 27.2	1.50	15 27.7	56 38.1	1.24
19.5	16 16.8	59 38.4	1.02	15 36.1	57 8.9	1.56	15 23.6	56 23.0	1.25
20.0	16 13.1	59 24.7	1.27	15 30.9	56 49.9	1.58	15 19.5	56 7.9	1.26
20.5	16 8.5	59 8.1	1.49	15 25.7	56 30.8	1.60	15 15.4	55 52.9	1.24
21.0	16 3.4	58 49.1	1.67	15 20.5	56 11.7	1.59	15 11.4	55 38.2	1.21
21.5	15 57.6	58 28.0	1.81	15 15.5	55 53.1	1.53	15 7.5	55 24.0	1.17
22.0	15 51.5	58 5.5	1.93	15 10.6	55 35.2	1.45	15 3.8	55 10.3	1.11
22.5	15 45.1	57 41.9	2.00	15 6.0	55 18.5	1.35	15 0.3	54 57.5	1.03
23.0	15 38.5	57 17.8	2.01	15 1.9	55 3.2	1.21	14 57.1	54 45.8	0.93
23.5	15 31.9	56 53.6	2.01	14 58.2	54 49.6	1.06	14 54.3	54 35.4	0.82
24.0	15 25.5	56 29.9	1.94	14 55.0	54 37.9	0.89	14 51.9	54 26.5	0.68
24.5	15 19.3	56 7.2	1.85	14 52.4	54 28.4	0.70	14 49.9	54 19.3	0.53
25.0	15 13.5	55 45.8	1.72	14 50.4	54 21.2	0.50	14 48.5	54 14.0	0.37
25.5	15 8.1	55 26.1	1.57	14 49.1	54 16.4	0.29	14 47.6	54 10.7	−0.18
26.0	15 3.3	55 8.3	1.40	14 48.7	54 14.2	−0.07	14 47.3	54 9.7	+0.01
26.5	14 59.0	54 52.7	1.20	14 48.7	54 14.7	+0.14	14 47.7	54 11.0	0.21
27.0	14 55.4	54 39.5	1.00	14 49.5	54 17.7	0.36	14 48.7	54 14.7	0.41
27.5	14 52.5	54 28.8	0.78	14 51.0	54 23.4	0.58	14 50.4	54 21.0	0.63
28.0	14 50.3	54 20.7	0.57	14 53.3	54 31.7	0.79	14 52.8	54 29.8	0.84
28.5	14 48.8	54 15.2	0.35	14 56.2	54 42.4	0.99	14 55.9	54 41.1	1.05
29.0	14 48.0	54 12.4	−0.13	14 59.8	54 55.5	1.19	14 59.6	54 55.0	1.26
29.5	14 48.0	54 12.2	+0.09	15 3.9	55 10.7	+1.36	15 4.1	55 11.3	1.45
30.0	14 48.6	54 14.5	0.30				15 9.1	55 29.9	1.64
30.5	14 49.9	54 19.2	0.49				15 14.8	55 50.7	1.81
31.0	14 51.8	54 26.3	0.68				15 21.0	56 13.3	1.95
31.5	14 54.3	54 35.4	+0.84				15 27.5	56 37.4	+2.07

$\Delta s = .272\ \Delta\pi$

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.			MAY.			JUNE.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d 1.0	15′ 34″.4	57′ 2″.7	+2″.15	16′ 4″.2	58′ 52″.2	+2″.36	16′ 39″.4	61′ 1″.3	+1″.23
1.5	15 41.5	57 28.8	2.18	16 11.7	59 19.8	2.24	16 42.8	61 13.8	0.85
2.0	15 48.7	57 55.1	2.19	16 18.8	59 45.6	2.07	16 44.9	61 21.7	0.45
2.5	15 55.8	58 21.1	2.15	16 25.2	60 9.2	1.85	16 45.7	61 24.6	+0.04
3.0	16 2.6	58 46.1	2.04	16 30.8	60 29.7	1.57	16 45.1	61 22.4	—0.39
3.5	16 9.0	59 9.6	1.89	16 35.4	60 46.6	1.25	16 43.2	61 15.2	0.80
4.0	16 14.8	59 31.1	1.69	16 38.9	60 59.4	0.89	16 39.9	61 3.3	1.18
4.5	16 19.9	59 49.9	1.45	16 41.1	61 7.6	0.50	16 35.5	60 47.1	1.52
5.0	16 24.2	60 5.6	1.17	16 42.1	61 11.2	+0.10	16 30.1	60 27.2	1.80
5.5	16 27.5	60 17.8	0.87	16 41.8	61 10.1	—0.29	16 23.8	60 4.2	2.03
6.0	16 29.8	60 26.3	0.56	16 40.2	61 4.2	0.67	16 16.9	59 38.7	2.20
6.5	16 31.1	60 31.1	+0.24	16 37.4	60 54.1	1.02	16 9.5	59 11.6	2.31
7.0	16 31.4	60 31.9	—0.09	16 33.6	60 40.0	1.32	16 1.9	58 43.5	2.37
7.5	16 30.6	60 29.1	0.39	16 28.8	60 22.6	1.59	15 54.1	58 15.0	2.38
8.0	16 28.9	60 22.8	0.66	16 23.3	60 2.3	1.80	15 46.4	57 46.7	2.34
8.5	16 26.3	60 13.3	0.92	16 17.2	59 39.8	1.95	15 38.9	57 19.2	2.25
9.0	16 23.0	60 1.2	1.12	16 10.7	59 15.8	2.05	15 31.7	56 52.8	2.15
9.5	16 19.1	59 46.7	1.29	16 3.9	58 50.8	2.10	15 24.9	56 27.8	2.02
10.0	16 14.7	59 30.5	1.42	15 57.0	58 25.5	2.11	15 18.6	56 4.6	1.86
10.5	16 9.9	59 12.9	1.51	15 50.1	58 0.2	2.10	15 12.8	55 43.2	1.70
11.0	16 4.8	58 54.3	1.58	15 43.3	57 35.5	2.03	15 7.5	55 23.8	1.54
11.5	15 59.6	58 35.3	1.60	15 36.8	57 11.6	1.95	15 2.7	55 6.4	1.36
12.0	15 54.4	58 16.0	1.61	15 30.6	56 48.8	1.85	14 58.5	54 51.0	1.19
12.5	15 49.1	57 56.7	1.60	15 24.7	56 27.2	1.74	14 55.0	54 37.8	1.02
13.0	15 43.9	57 37.7	1.57	15 19.3	56 7.1	1.62	14 51.9	54 26.5	0.85
13.5	15 38.9	57 19.2	1.53	15 14.2	55 48.4	1.49	14 49.3	54 17.2	0.70
14.0	15 33.9	57 1.2	1.48	15 9.5	55 31.3	1.37	14 47.3	54 9.8	0.54
14.5	15 29.3	56 43.8	1.42	15 5.3	55 15.7	1.24	14 45.8	54 4.2	0.40
15.0	15 24.7	56 27.1	1.36	15 1.4	55 1.6	1.11	14 44.7	54 0.3	0.26
15.5	15 20.4	56 11.2	1.30	14 58.0	54 49.0	0.99	14 44.1	53 58.0	0.13
16.0	15 16.2	55 56.0	1.23	14 55.0	54 37.9	0.87	14 43.9	53 57.2	—0.01
16.5	15 12.3	55 41.6	1.17	14 52.3	54 28.1	0.75	14 44.0	53 57.7	+0.10
17.0	15 8.6	55 28.0	1.11	14 50.1	54 19.8	0.64	14 44.6	53 59.7	0.21
17.5	15 5.1	55 15.1	1.04	14 48.2	54 12.8	0.53	14 45.4	54 2.9	0.32
18.0	15 1.8	55 3.1	0.97	14 46.6	54 7.1	0.43	14 46.7	54 7.4	0.43
18.5	14 58.8	54 51.9	0.90	14 45.5	54 2.7	0.32	14 48.3	54 13.2	0.53
19.0	14 56.0	54 41.6	0.82	14 44.5	53 59.5	0.22	14 50.2	54 20.2	0.64
19.5	14 53.5	54 32.3	0.74	14 44.0	53 57.6	—0.11	14 52.4	54 28.6	0.75
20.0	14 51.2	54 24.0	0.65	14 43.9	53 57.1	+0.01	14 55.1	54 38.3	0.86
20.5	14 49.2	54 16.8	0.55	14 44.1	53 57.9	0.13	14 58.1	54 49.5	0.98
21.0	14 47.6	54 10.9	0.44	14 44.7	54 0.3	0.25	15 1.5	55 1.9	1.10
21.5	14 46.4	54 6.3	0.32	14 45.8	54 4.2	0.39	15 5.3	55 15.9	1.22
22.0	14 45.6	54 3.4	0.18	14 47.3	54 9.7	0.53	15 9.5	55 31.3	1.35
22.5	14 45.2	54 2.1	—0.04	14 49.3	54 17.0	0.68	15 14.1	55 48.3	1.47
23.0	14 45.4	54 2.7	+0.12	14 51.8	54 26.2	0.84	15 19.2	56 6.7	1.59
23.5	14 46.1	54 5.2	0.29	14 54.8	54 37.3	1.00	15 24.5	56 26.5	1.71
24.0	14 47.3	54 9.7	0.47	14 58.3	54 50.2	1.16	15 30.4	56 47.8	1.82
24.5	14 49.1	54 16.4	0.65	15 2.4	55 5.3	1.33	15 36.4	57 10.2	1.92
25.0	14 51.4	54 25.4	0.85	15 7.1	55 22.3	1.50	15 42.9	57 33.7	2.00
25.5	14 54.7	54 36.8	1.04	15 12.3	55 41.4	1.67	15 49.5	57 58.1	2.06
26.0	14 58.4	54 50.5	1.24	15 18.0	56 2.4	1.83	15 56.3	58 23.0	2.08
26.5	15 2.8	55 6.5	1.43	15 24.2	56 25.3	1.98	16 3.1	58 48.0	2.08
27.0	15 7.8	55 24.9	1.62	15 30.9	56 49.8	2.11	16 9.8	59 12.7	2.03
27.5	15 13.4	55 45.5	1.81	15 38.0	57 15.9	2.22	16 16.3	59 36.5	1.94
28.0	15 19.6	56 8.2	1.98	15 45.4	57 43.2	2.31	16 22.4	59 58.8	1.79
28.5	15 26.3	56 32.8	2.12	15 53.1	58 11.3	2.36	16 27.9	60 19.1	1.59
29.0	15 33.4	56 59.1	2.25	16 0.8	58 39.7	2.37	16 32.7	60 36.6	1.34
29.5	15 41.0	57 26.7	2.34	16 8.5	59 7.9	2.32	16 36.5	60 50.9	1.04
30.0	15 48.7	57 55.1	2.39	16 15.9	59 35.1	2.22	16 39.4	61 1.3	0.70
30.5	15 56.5	58 23.8	2.39	16 22.9	60 0.8	2.05	16 41.0	61 7.4	+0.33
31.0	16 4.2	58 52.2	2.36	16 29.3	60 24.2	1.84	$\Delta s = .272\, \Delta\pi$		
31.5	16 11.7	59 19.8	+2.24	16 34.8	60 44.6	+1.56			

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.			AUGUST.			SEPTEMBER.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d 1.0	16′ 41″.5	61′ 9″.1	−0″.04	16′ 14″.4	59′ 29″.6	−1″.66	15′ 30″.6	56′ 48″.8	−1″.82
1.5	16 40.7	61 6.0	0.45	16 8.4	59 7.5	1.85	15 24.7	56 27.2	1.79
2.0	16 38.5	60 58.2	0.84	16 2.3	58 45.3	2.00	15 19.0	56 6.2	1.71
2.5	16 35.2	60 46.0	1.19	15 55.6	58 20.6	2.10	15 13.6	55 46.3	1.62
3.0	16 30.8	60 29.7	1.52	15 48.6	57 55.0	2.15	15 8.6	55 27.7	1.49
3.5	16 25.3	60 9.7	1.80	15 41.6	57 29.1	2.16	15 3.9	55 10.7	1.34
4.0	16 19.1	59 46.7	2.03	15 34.6	57 3.4	2.13	14 59.8	54 55.7	1.17
4.5	16 12.5	59 21.4	2.20	15 27.8	56 38.3	2.05	14 56.3	54 42.9	0.98
5.0	16 4.8	58 54.3	2.31	15 21.3	56 14.3	1.94	14 53.5	54 32.4	0.78
5.5	15 57.1	58 26.1	2.37	15 15.1	55 51.9	1.80	14 51.3	54 24.3	0.57
6.0	15 49.4	57 57.7	2.38	15 9.5	55 31.3	1.64	14 49.8	54 18.7	0.35
6.5	15 41.7	57 29.4	2.34	15 4.4	55 12.7	1.46	14 49.0	54 15.8	−0.14
7.0	15 34.2	57 1.8	2.25	15 0.0	54 56.4	1.26	14 48.9	54 15.4	+0.08
7.5	15 27.0	56 35.6	2.14	14 56.2	54 42.5	1.06	14 49.4	54 17.6	0.29
8.0	15 20.3	56 10.8	1.99	14 53.1	54 31.1	0.85	14 50.8	54 22.4	0.50
8.5	15 14.0	55 47.9	1.83	14 50.7	54 22.1	0.64	14 52.7	54 29.5	0.69
9.0	15 8.4	55 27.1	1.65	14 48.9	54 15.7	0.43	14 55.3	54 38.9	0.87
9.5	15 3.3	55 8.4	1.46	14 47.9	54 11.8	0.22	14 58.4	54 50.5	1.04
10.0	14 58.9	54 52.2	1.27	14 47.5	54 10.3	−0.02	15 2.1	55 3.9	1.19
10.5	14 55.1	54 38.2	1.07	14 47.7	54 11.2	+0.17	15 6.2	55 19.0	1.32
11.0	14 51.9	54 26.6	0.87	14 48.6	54 14.3	0.35	15 10.6	55 35.4	1.42
11.5	14 49.4	54 17.3	0.68	14 50.0	54 19.5	0.51	15 15.4	55 53.0	1.50
12.0	14 47.5	54 10.4	0.49	14 51.9	54 26.5	0.66	15 20.4	56 11.3	1.55
12.5	14 46.2	54 5.6	0.31	14 54.3	54 35.3	0.80	15 25.5	56 30.1	1.57
13.0	14 45.5	54 3.0	−0.13	14 57.1	54 45.6	0.91	15 30.7	56 49.1	1.58
13.5	14 45.3	54 2.4	+0.03	15 0.2	54 57.2	1.02	15 35.8	57 7.8	1.54
14.0	14 45.6	54 3.5	0.18	15 3.7	55 9.9	1.10	15 40.7	57 26.0	1.49
14.5	14 46.4	54 6.5	0.31	15 7.4	55 23.5	1.16	15 45.5	57 43.3	1.41
15.0	14 47.6	54 10.9	0.43	15 11.3	55 37.8	1.21	15 49.9	57 59.6	1.31
15.5	14 49.3	54 16.9	0.55	15 15.3	55 52.5	1.24	15 54.0	58 14.6	1.19
16.0	14 51.2	54 24.1	0.65	15 19.4	56 7.6	1.26	15 57.7	58 28.1	1.06
16.5	14 53.5	54 32.4	0.74	15 23.5	56 22.8	1.27	16 0.9	58 39.9	0.92
17.0	14 56.1	54 41.9	0.82	15 27.7	56 38.0	1.27	16 3.6	58 50.1	0.78
17.5	14 58.9	54 52.3	0.90	15 31.8	56 53.1	1.26	16 6.0	58 58.6	0.64
18.0	15 2.0	55 3.6	0.98	15 35.9	57 8.1	1.24	16 7.8	59 5.5	0.50
18.5	15 5.3	55 15.7	1.05	15 39.8	57 22.7	1.21	16 9.3	59 10.7	0.37
19.0	15 8.8	55 28.7	1.11	15 43.7	57 37.0	1.18	16 10.3	59 14.4	0.25
19.5	15 12.5	55 42.4	1.18	15 47.5	57 50.8	1.14	16 10.9	59 16.6	0.13
20.0	15 16.5	55 57.0	1.24	15 51.2	58 4.3	1.11	16 11.1	59 17.4	+0.02
20.5	15 20.7	56 12.3	1.30	15 54.7	58 17.3	1.06	16 11.0	59 17.0	−0.09
21.0	15 25.0	56 28.2	1.36	15 58.1	58 29.8	1.02	16 10.5	59 15.3	0.19
21.5	15 29.6	56 44.9	1.42	16 1.3	58 41.6	0.97	16 9.8	59 12.5	0.28
22.0	15 34.3	57 2.3	1.47	16 4.4	58 52.9	0.91	16 8.7	59 8.6	0.38
22.5	15 39.2	57 20.2	1.51	16 7.2	59 3.3	0.83	16 7.3	59 3.5	0.47
23.0	15 44.2	57 38.7	1.55	16 9.8	59 12.8	0.75	16 5.6	58 57.3	0.56
23.5	15 49.3	57 57.5	1.57	16 12.1	59 21.3	0.66	16 3.6	58 49.9	0.66
24.0	15 54.5	58 16.5	1.59	16 14.1	59 28.5	0.54	16 1.3	58 41.4	0.76
24.5	15 59.7	58 35.6	1.59	16 15.6	59 34.2	0.41	15 58.6	58 31.6	0.86
25.0	16 4.8	58 54.4	1.56	16 16.7	59 38.2	0.26	15 55.7	58 20.7	0.96
25.5	16 9.8	59 12.7	1.49	16 17.3	59 40.2	+0.09	15 52.3	58 8.6	1.06
26.0	16 14.5	59 30.0	1.39	16 17.3	59 40.1	−0.10	15 48.7	57 55.3	1.15
26.5	16 18.8	59 45.9	1.26	16 16.6	59 37.7	0.30	15 44.8	57 40.9	1.24
27.0	16 22.7	60 0.0	1.09	16 15.3	59 32.8	0.51	15 40.6	57 25.6	1.31
27.5	16 25.9	60 11.9	0.88	16 13.3	59 25.5	0.72	15 36.3	57 9.5	1.37
28.0	16 28.4	60 21.0	0.64	16 10.6	59 15.5	0.93	15 31.7	56 52.7	1.42
28.5	16 30.1	60 27.1	0.39	16 7.2	59 3.2	1.13	15 27.0	56 35.5	1.44
29.0	16 30.8	60 29.8	+0.08	16 3.2	58 48.5	1.31	15 22.3	56 18.2	1.45
29.5	16 30.5	60 28.9	−0.23	15 58.7	58 31.8	1.47	15 17.6	56 0.9	1.43
30.0	16 29.2	60 24.1	0.55	15 53.6	58 13.3	1.61	15 13.0	55 44.1	1.39
30.5	16 27.0	60 15.7	0.86	15 48.2	57 53.3	1.71	15 8.6	55 27.9	−1.32
31.0	16 23.7	60 3.6	1.15	15 42.5	57 32.3	1.78	$\Delta s = .272\,\Delta\pi$		
31.5	16 19.4	59 48.1	−1.42	15 36.6	57 10.7	−1.82			

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.			NOVEMBER.			DECEMBER.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d	′ ″	′ ″	″	′ ″	′ ″	″	′ ″	′ ″	″
1.0	15 4.4	55 12.6	−1.23	14 46.6	54 7.1	−0.16	14 48.2	54 13.0	+0.60
1.5	15 0.6	54 58.6	1.11	14 46.4	54 6.3	+0.02	14 50.5	54 21.3	0.78
2.0	14 57.2	54 46.1	0.98	14 46.7	54 7.6	0.21	14 53.3	54 31.7	0.96
2.5	14 54.3	54 35.3	0.82	14 47.7	54 11.3	0.41	14 56.7	54 44.4	1.15
3.0	14 51.9	54 26.5	0.65	14 49.4	54 17.4	0.61	15 0.8	54 59.4	1.34
3.5	14 50.1	54 19.8	0.47	14 51.7	54 25.9	0.82	15 5.6	55 16.7	1.54
4.0	14 48.9	54 15.4	0.27	14 54.7	54 37.1	1.03	15 10.9	55 36.2	1.72
4.5	14 48.3	54 13.5	−0.06	14 58.5	54 50.7	1.24	15 16.8	55 58.0	1.90
5.0	14 48.5	54 14.1	+0.15	15 2.9	55 6.8	1.44	15 23.3	56 21.8	2.06
5.5	14 49.3	54 17.2	0.37	15 7.9	55 25.3	1.64	15 30.2	56 47.4	2.21
6.0	14 50.9	54 23.0	0.59	15 13.6	55 46.1	1.82	15 37.7	57 14.7	2.33
6.5	14 53.2	54 31.4	0.80	15 19.8	56 9.0	1.98	15 45.4	57 43.1	2.41
7.0	14 56.2	54 42.3	1.01	15 26.5	56 33.6	2.12	15 53.4	58 12.3	2.44
7.5	14 59.8	54 55.6	1.21	15 33.6	56 59.6	2.22	16 1.4	58 41.7	2.45
8.0	15 4.0	55 11.2	1.39	15 41.0	57 26.7	2.29	16 9.3	59 10.7	2.39
8.5	15 8.9	55 29.0	1.56	15 48.5	57 54.4	2.31	16 16.8	59 38.5	2.26
9.0	15 14.2	55 48.6	1.71	15 56.0	58 22.0	2.30	16 23.9	60 4.4	2.07
9.5	15 20.0	56 9.8	1.82	16 3.3	58 49.0	2.21	16 30.2	60 27.7	1.81
10.0	15 26.1	56 32.2	1.91	16 10.4	59 14.8	2.08	16 35.6	60 47.6	1.50
10.5	15 32.4	56 55.5	1.96	16 16.9	59 38.6	1.89	16 40.0	61 3.7	1.16
11.0	15 38.9	57 19.1	1.97	16 22.7	59 59.9	1.65	16 43.2	61 15.2	0.76
11.5	15 45.3	57 42.7	1.96	16 27.6	60 18.0	1.37	16 45.0	61 21.8	+0.35
12.0	15 51.6	58 5.7	1.89	16 31.5	60 32.5	1.05	16 45.4	61 23.4	−0.08
12.5	15 57.5	58 27.6	1.78	16 34.4	60 42.9	0.70	16 44.4	61 19.8	0.50
13.0	16 3.1	58 48.1	1.63	16 36.0	60 49.1	+0.34	16 42.1	61 11.4	0.91
13.5	16 8.1	59 6.5	1.45	16 36.6	60 51.0	−0.03	16 38.6	60 58.3	1.27
14.0	16 12.5	59 22.6	1.23	16 35.9	60 48.6	0.38	16 33.9	60 41.2	1.58
14.5	16 16.1	59 35.9	0.99	16 34.1	60 42.1	0.70	16 28.3	60 20.6	1.85
15.0	16 18.9	59 46.3	0.74	16 31.4	60 31.9	1.00	16 21.9	59 57.3	2.05
15.5	16 20.9	59 53.6	0.48	16 27.7	60 18.3	1.26	16 15.0	59 31.8	2.19
16.0	16 22.1	59 57.9	+0.23	16 23.2	60 2.0	1.47	16 7.7	59 5.1	2.27
16.5	16 22.4	59 59.1	−0.02	16 18.2	59 43.4	1.63	16 0.2	58 37.6	2.29
17.0	16 22.0	59 57.4	0.25	16 12.6	59 23.1	1.74	15 52.8	58 10.1	2.29
17.5	16 21.0	59 53.1	0.46	16 6.8	59 1.8	1.81	15 45.4	57 43.0	2.23
18.0	16 19.0	59 46.5	0.64	16 0.9	58 39.9	1.84	15 38.3	57 16.8	2.14
18.5	16 16.7	59 37.9	0.80	15 54.9	58 17.8	1.84	15 31.5	56 51.9	2.02
19.0	16 13.8	59 27.5	0.93	15 48.9	57 55.8	1.81	15 25.1	56 28.4	1.91
19.5	16 10.6	59 15.7	1.03	15 43.1	57 34.5	1.77	15 19.1	56 6.5	1.75
20.0	16 7.1	59 2.9	1.10	15 37.4	57 13.8	1.69	15 13.7	55 46.5	1.60
20.5	16 3.4	58 49.3	1.16	15 32.0	56 54.0	1.61	15 8.7	55 28.2	1.45
21.0	15 59.6	58 35.1	1.19	15 26.9	56 35.2	1.52	15 4.2	55 11.8	1.29
21.5	15 55.6	58 20.6	1.21	15 22.1	56 17.5	1.44	15 0.2	54 57.2	1.14
22.0	15 51.6	58 5.8	1.23	15 17.6	56 0.8	1.35	14 56.7	54 44.3	1.00
22.5	15 47.6	57 51.0	1.24	15 13.3	55 45.2	1.26	14 53.7	54 33.2	0.86
23.0	15 43.5	57 36.0	1.24	15 9.3	55 30.6	1.17	14 51.1	54 23.7	0.72
23.5	15 39.4	57 21.1	1.24	15 5.7	55 17.2	1.08	14 49.0	54 15.8	0.60
24.0	15 35.3	57 6.2	1.24	15 2.3	55 4.7	0.99	14 47.3	54 9.4	0.47
24.5	15 31.3	56 51.3	1.23	14 59.2	54 53.3	0.91	14 45.9	54 4.4	0.36
25.0	15 27.3	56 36.5	1.23	14 56.3	54 42.9	0.82	14 44.9	54 0.8	0.25
25.5	15 23.3	56 21.9	1.21	14 53.8	54 33.6	0.74	14 44.3	53 58.5	0.14
26.0	15 19.3	56 7.4	1.20	14 51.5	54 25.2	0.65	14 44.0	53 57.4	−0.04
26.5	15 15.5	55 53.2	1.18	14 49.5	54 17.9	0.56	14 44.0	53 57.6	+0.06
27.0	15 11.7	55 39.3	1.14	14 47.9	54 11.7	0.47	14 44.4	53 59.0	0.17
27.5	15 8.0	55 25.8	1.11	14 46.5	54 6.7	0.37	14 45.2	54 1.8	0.28
28.0	15 4.5	55 12.8	1.06	14 45.5	54 2.9	0.26	14 46.3	54 5.8	0.39
28.5	15 1.2	55 0.6	0.99	14 44.8	54 0.5	0.14	14 47.7	54 11.2	0.51
29.0	14 58.0	54 49.1	0.92	14 44.5	53 59.5	−0.02	14 49.6	54 18.1	0.63
29.5	14 55.2	54 38.7	0.83	14 44.7	54 0.2	+0.12	14 51.9	54 26.5	0.76
30.0	14 52.6	54 29.3	0.73	14 45.4	54 2.6	0.26	14 54.6	54 36.5	0.90
30.5	14 50.5	54 21.3	0.61	14 46.5	54 6.8	+0.43	14 57.8	54 48.1	1.04
31.0	14 48.7	54 14.8	0.48		$\Delta s = .272\,\Delta\pi$		15 1.4	55 1.5	1.19
31.5	14 47.4	54 10.0	−0.32				15 5.6	55 16.7	+1.34

WASHINGTON MEAN TIME.

PHASES.

Month.	Full Moon.	Last Quarter.	New Moon.	First Quarter.	Full Moon.
	d h m	d h m	d h m	d h m	d h m
January	6 4 15.4	13 13 48.8	20 7 23.6	27 20 6.2	
February	4 20 53.8	11 21 52.2	18 20 40.8	26 17 30.1	
March	6 10 31.0	13 5 11.6	20 10 52.3	28 13 36.1	
April	4 21 14.8	11 12 43.5	19 1 55.2	27 6 30.3	
May	4 5 52.1	10 21 15.4	18 17 36.9	26 19 53.9	
June	2 13 19.1	9 7 29.1	17 9 21.3	25 5 36.2	
July	1 20 27.9	8 20 0.9	17 0 19.1	24 12 42.9	31 4 8.6
August		7 11 15.5	15 13 53.5	22 18 27.2	29 13 12.6
September		6 5 1.7	14 2 1.3	21 0 4.1	28 0 36.2
October		6 0 23.7	13 13 11.0	20 6 46.3	27 15 6.1
November		4 19 46.9	12 0 0.7	18 15 39.0	26 8 45.1
December		4 13 37.5	11 10 53.7	18 3 33.3	26 4 26.8

APOGEE, PERIGEE, AND GREATEST LIBRATION.

Month.	Apogee.	Perigee.	Apogee.	GREATEST LIBRATION.		
	d h	d h	d h	d h m	d h m	
January	1 11.4	17 13.1	19 6.9	9 22 59 S.E.	23 6 56 S.W.	
February		13 2.0	26 4.1	5 2 14 S.E.	19 19 24 S.W.	
March		10 4.5	25 23.2	4 5 47 S.E.	18 7 16 S.W.	d h m
April		6 20.9	22 14.6	1 2 3 S.E.	13 19 17 S.W.	29 5 27 S.E.
May		5 3.1	19 22.8		11 11 38 S.W.	27 10 41 S.E.
June		2 13.0	16 1.1		8 14 46 S.W.	24 12 50 S.E.
July		0 22.1	13 10.2		6 19 52 S.W.	22 3 34 S.E.
July		29 2.9				
August	10 1.6	25 17.4		3 22 16 S.W.	17 16 37 S.E.	31 17 21 S.W.
September	6 19.7	20 1.9			13 5 22 S.E.	27 21 20 S.W.
October	4 15.1	16 11.1			10 16 5 S.E.	24 2 51 S.W.
November	1 10.7	13 11.3	29 1.3		7 16 20 S.E.	20 1 52 S.W.
December		11 21.7	26 4.3		5 23 19 S.E.	18 1 28 S.W.

MOON'S EQUATOR.

The moon's libration in latitude and longitude, at any time, may be found by means of the following formulas and tables:

I = the inclination to the ecliptic of the moon's equator $= 1° 28'.8$.

Ω = mean longitude of the moon's ascending node (see page 250).

= mean longitude of the descending node of the moon's equator.

C = the angle at the centre of the moon's disc made by a meridian of the moon with the circle of declination, reckoned from north to east on the apparent disc.

i, Δ, Ω', and ☾ are defined on the next page, where their values for the year are given.

λ, β, a, and δ' the apparent longitude, latitude, right ascension, and declination of the moon affected with parallax.

λ' = the selenocentric longitude of the earth, reckoned on the moon's equator from its descending node, Ω.

$$\left.\begin{aligned} \Delta\lambda &= -0'.57 \sin 2(\Omega - \lambda) \\ a &= \sin I \cos(\Omega - \lambda) \\ \tan B &= \tan I \sin(\Omega - \lambda) \\ \lambda' &= \lambda + \Delta\lambda + a\,b \end{aligned}\right\} \text{See table, p. 345.}$$

The libration in latitude $= b = B - \beta$,

" " longitude $= l = \lambda' - ☾$.

$$\sin C = \sin i \frac{\cos(\lambda' + \Delta - \Omega)}{\cos \delta'} = -\sin i \frac{\cos(a' - \Omega')}{\cos b}.$$

WASHINGTON MEAN TIME.

Mean Noon.		MOON'S EQUATOR.			☾ Moon's Mean Longitude.
		i Inclination to the Earth's Equator.	Δ Ascending Node on Earth's Equator to Ascending Node on Ecliptic.	☊′ Ascending Node on Earth's Equator.	
Jan.	0	23° 45′.5	283° 22′.6	356° 23′.0	28° 51′.9
	10	23 44.7	282 51.3	356 22.5	160 37.7
	20	23 43.9	282 19.9	356 22.0	292 23.5
	30	23 43.1	281 48.6	356 21.6	64 9.4
Feb.	9	23 42.3	281 17.2	356 21.2	195 55.2
	19	23 41.5	280 45.8	356 20.7	327 41.0
March	1	23 40.7	280 14.4	356 20.4	99 26.9
	11	23 39.9	279 43.0	356 20.1	231 12.7
	21	23 39.1	279 11.6	356 19.8	2 58.6
	31	23 38.3	278 40.1	356 19.4	134 44.4
April	10	23 37.5	278 8.6	356 19.1	266 30.2
	20	23 36.7	277 37.1	356 18.8	38 16.1
	30	23 35.9	277 5.6	356 18.6	170 1.9
May	10	23 35.1	276 34.1	356 18.3	301 47.7
	20	23 34.3	276 2.5	356 18.1	73 33.6
	30	23 33.4	275 31.0	356 18.0	205 19.4
June	9	23 32.6	274 59.4	356 17.8	337 5.3
	19	23 31.8	274 27.8	356 17.6	108 51.1
	29	23 31.0	273 56.1	356 17.4	240 36.9
July	9	23 30.1	273 24.5	356 17.3	12 22.8
	19	23 29.3	272 52.8	356 17.2	144 8.6
	29	23 28.5	272 21.1	356 17.1	275 54.4
Aug.	8	23 27.7	271 49.4	356 17.0	47 40.3
	18	23 26.8	271 17.7	356 16.9	179 26.1
	28	23 26.0	270 46.0	356 16.9	311 12.0
Sept.	7	23 25.2	270 14.3	356 16.9	82 57.8
	17	23 24.4	269 42.5	356 16.8	214 43.6
	27	23 23.6	269 10.7	356 16.9	346 29.5
Oct.	7	23 22.8	268 38.9	356 16.9	118 15.3
	17	23 22.0	268 7.1	356 16.9	250 1.2
	27	23 21.2	267 35.2	356 17.0	21 47.0
Nov.	6	23 20.3	267 3.4	356 17.1	153 32.8
	16	23 19.5	266 31.5	356 17.3	285 18.7
	26	23 18.7	265 59.6	356 17.4	57 4.5
Dec.	6	23 17.9	265 27.7	356 17.6	188 50.3
	16	23 17.0	264 55.8	356 17.8	320 36.2
	26	23 16.2	264 23.8	356 18.0	92 22.0
	36	23 15.4	263 51.7	356 18.2	224 7.8

Mean Solar Days.	Motion of ☾.
0.1	1° 19′.06
0.2	2 38.12
0.3	3 57.18
0.4	5 16.23
0.5	6 35.29
0.6	7 54.35
0.7	9 13.41
0.8	10 32.47
0.9	11 51.53
1.0	13 10.58
2.0	26 21.17
3.0	39 31.75
4.0	52 42.33
5.0	65 52.92
6.0	79 3.50
7.0	92 14.09
8.0	105 24.67
9.0	118 35.25
10.0	131 45.84
Hours.	
1	0 32.94
2	1 5.88
3	1 38.82
4	2 11.76
5	2 44.70
6	3 17.65
7	3 50.59
8	4 23.53
9	4 56.47
10	5 29.41
11	6 2.35
12	6 35.29
13	7 8.23
14	7 41.17
15	8 14.11
16	8 47.06
17	9 20.00
18	9 52.94
19	10 25.88
20	10 58.82
21	11 31.76
22	12 4.70
23	12 37.64

TABLE FOR THE LIBRATION OF THE MOON.

Argument, (☊—λ) or (☊—λ—180°.)

☊—λ	Δ λ	a^{-1}	B	☊—λ	☊—λ	Δ λ	a^{-1}	B	☊—λ
0°	0′.0	39	0° 0′.0	180°	46°	0′.6	56	1° 3′.9	134°
1	0.0	39	0 1.6	179	47	0.6	57	1 4.9	133
2	0.0	39	0 3.1	178	48	0.6	58	1 6.0	132
3	0.1	39	0 4.7	177	49	0.6	59	1 7.0	131
4	0.1	39	0 6.2	176	50	0.6	60	1 8.0	130
5	0.1	39	0 7.7	175	51	0.6	62	1 9.0	129
6	0.2	39	0 9.3	174	52	0.6	63	1 10.0	128
7	0.2	39	0 10.8	173	53	0.5	64	1 10.9	127
8	0.2	39	0 12.4	172	54	0.5	66	1 11.8	126
9	0.2	39	0 13.9	171	55	0.5	67	1 12.7	125
10	0.2	39	0 15.4	170	56	0.5	69	1 13.6	124
11	0.3	39	0 16.9	169	57	0.5	71	1 14.5	123
12	0.3	40	0 18.5	168	58	0.5	73	1 15.3	122
13	0.3	40	0 20.0	167	59	0.5	75	1 16.1	121
14	0.3	40	0 21.5	166	60	0.5	77	1 16.9	120
15	0.3	40	0 23.0	165	61	0.5	80	1 17.6	119
16	0.3	40	0 24.5	164	62	0.5	83	1 18.4	118
17	0.3	40	0 26.0	163	63	0.5	86	1 19.1	117
18	0.3	41	0 27.4	162	64	0.5	89	1 19.8	116
19	0.4	41	0 28.9	161	65	0.4	92	1 20.4	115
20	0.4	41	0 30.4	160	66	0.4	95	1 21.1	114
21	0.4	41	0 31.8	159	67	0.4	99	1 21.7	113
22	0.4	42	0 33.2	158	68	0.4	103	1 22.3	112
23	0.4	42	0 34.7	157	69	0.4	108	1 22.9	111
24	0.4	42	0 36.1	156	70	0.4	113	1 23.4	110
25	0.4	43	0 37.5	155	71	0.4	119	1 23.9	109
26	0.5	43	0 38.9	154	72	0.4	125	1 24.4	108
27	0.5	43	0 40.3	153	73	0.4	132	1 24.9	107
28	0.5	44	0 41.7	152	74	0.3	141	1 25.3	106
29	0.5	44	0 43.1	151	75	0.3	150	1 25.7	105
30	0.5	45	0 44.4	150	76	0.3	160	1 26.1	104
31	0.5	45	0 45.7	149	77	0.3	172	1 26.5	103
32	0.5	46	0 47.0	148	78	0.2	186	1 26.8	102
33	0.5	46	0 48.4	147	79	0.2	202	1 27.1	101
34	0.5	47	0 49.7	146	80	0.2	222	1 27.4	100
35	0.5	47	0 51.0	145	81	0.2	247	1 27.7	99
36	0.5	48	0 52.2	144	82	0.2	278	1 27.9	98
37	0.5	48	0 53.4	143	83	0.1	318	1 28.1	97
38	0.6	49	0 54.7	142	84	0.1	370	1 28.3	96
39	0.6	50	0 55.9	141	85	0.1	440	1 28.5	95
40	0.6	50	0 57.1	140	86	0.1	555	1 28.6	94
41	0.6	51	0 58.3	139	87	0.1	740	1 28.7	93
42	0.6	52	0 59.4	138	88	0.0	1110	1 28.7	92
43	0.6	53	1 0.6	137	89	0.0	2220	1 28.8	91
44	0.6	54	1 1.7	136	90	0.0	∞	1 28.8	90
45	0.6	55	1 2.8	135					

Δ λ has the sign of tan (λ—☊)

***a* has the sign of cos (☊—λ)**

***B* has the sign of sin (☊—λ)**

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 1	20 10 53.95	10.555	-21 11 14.8	+60.49	1 1 27.3	20 11 9.35	10.504	-21 9 46.7	+60.54
2	20 14 54.30	9.450	20 46 58.3	60.79	2 1 27.3	20 15 8.03	9.378	20 45 29.6	60.78
3	20 18 26.45	8.208	20 22 42.5	60.40	3 1 26.9	20 18 38.30	8.126	20 21 15.0	60.32
4	20 21 27.18	6.830	19 58 45.3	59.24	4 1 25.9	20 21 36.93	6.737	19 57 20.5	59.09
5	20 23 53.15	5.308	19 35 25.7	57.25	5 1 24.3	20 24 0.55	5.208	19 34 5.3	57.03
6	20 25 40.84	3.644	19 13 4.3	54.39	6 1 22.2	20 25 45.78	3.540	19 11 49.9	54.11
7	20 26 47.04	+1.853	18 52 2.1	50.65	7 1 19.4	20 26 49.44	+1.748	18 50 55.2	50.31
8	20 27 8.88	-0.049	18 32 40.2	46.04	8 1 15.7	20 27 8.77	-0.150	18 31 42.2	45.65
9	20 26 44.07	2.027	18 15 18.8	40.62	9 1 11.3	20 26 41.61	2.119	18 14 30.6	40.20
10	20 25 31.26	4.042	18 0 15.9	34.52	10 1 6.1	20 25 26.74	4.118	17 59 38.0	34.09
11	20 23 30.23	6.035	17 47 46.4	27.86	11 1 0.2	20 23 24.13	6.089	17 47 18.8	27.45
12	20 20 42.31	7.939	17 38 1.5	20.86	12 0 53.6	20 20 35.21	7.967	17 37 43.1	20.50
13	20 17 10.52	9.678	17 31 6.1	13.76	13 0 45.9	20 17 3.07	9.678	17 30 55.7	13.47
14	20 12 59.69	11.178	17 26 59.8	6.80	14 0 37.9	20 12 52.59	11.149	17 26 55.6	6.58
15	20 8 16.41	12.369	17 25 36.7	+0.20	15 0 29.3	20 8 10.35	12.315	17 25 36.7	+ 0.07
16	20 3 8.87	13.193	17 26 45.8	-5.84	16 0 20.3	20 3 4.39	13.119	17 26 47.8	- 5.88
17	19 57 46.33	13.615	17 30 11.6	11.18	17 0 11.0	19 57 43.82	13.530	17 30 13.6	11.15
18	19 52 18.60	13.627	17 35 36.3	15.74	18 0 1.7	19 52 18.22	13.540	17 35 36.7	15.65
					18 23 52.4	19 46 57.08	13.163	17 42 38.2	19.35
19	19 46 55.40	13.243	17 42 40.7	19.49	19 23 43.3	19 41 49.26	12.435	17 50 59.4	22.30
20	19 41 45.79	12.501	17 51 5.6	22.47	20 23 34.7	19 37 2.46	11.420	18 0 22.8	24.54
21	19 36 57.61	11.467	18 0 33.3	24.72	21 23 26.4	19 32 42.94	10.174	18 10 32.4	26.17
22	19 32 37.22	10.199	18 10 47.2	26.34	22 23 18.7	19 28 55.42	8.763	18 21 13.9	27.22
23	19 28 49.38	8.766	18 21 32.8	27.38	23 23 11.6	19 25 43.08	7.252	18 32 14.9	27.80
24	19 25 37.25	7.235	18 32 37.2	27.94	24 23 5.1	19 23 7.69	5.693	18 43 24.5	27.95
25	19 23 2.49	5.658	18 43 50.2	28.07	25 22 59.2	19 21 9.81	4.132	18 54 33.0	27.71
26	19 21 5.66	4.083	18 55 1.2	27.80	26 22 53.9	19 19 49.08	2.604	19 5 32.1	27.16
27	19 19 46.25	2.544	19 6 2.1	27.22	27 22 49.2	19 19 4.40	-1.132	19 16 14.4	26.32
28	19 19 3.10	-1.065	19 16 45.6	26.35	28 22 45.1	19 18 54.15	+0.265	19 26 33.0	25.19
29	19 18 54.53	+0.336	19 27 4.5	25.19	29 22 41.5	19 19 16.43	1.578	19 36 21.9	23.85
30	19 19 18.56	1.650	19 36 53.0	23.82	30 22 38.5	19 20 9.16	2.801	19 45 35.5	22.26
31	19 20 13.01	2.873	19 46 5.8	22.21	31 22 35.9	19 21 30.17	3.934	19 54 8.9	20.48
Feb. 1	19 21 35.72	4.004	19 54 37.6	20.41	1 22 33.8	19 23 17.28	4.977	20 1 57.6	18.54
2	19 23 24.46	5.043	20 2 24.2	18.44	2 22 32.2	19 25 28.38	5.935	20 8 57.5	16.43
3	19 25 37.10	5.997	20 9 21.5	16.31	3 22 30.7	19 28 1.49	6.812	20 15 5.0	14.17
4	19 28 11.68	6.870	20 15 25.9	14.04	4 22 29.6	19 30 54.74	7.614	20 20 16.7	11.79
5	19 31 6.27	7.667	20 20 34.3	11.64	5 22 28.8	19 34 6.40	8.345	20 24 29.7	9.28
6	19 34 19.12	8.393	20 24 43.7	9.12	6 22 28.3	19 37 34.80	9.013	20 27 41.4	6.68
7	19 37 48.61	9.055	20 27 51.4	6.51	7 22 28.1	19 41 18.53	9.622	20 29 49.5	3.99
8	19 41 33.29	9.659	20 29 55.4	3.81	8 22 28.2	19 45 16.21	10.176	20 30 51.9	- 1.21
9	19 45 31.80	10.208	20 30 53.6	-1.03	9 22 28.4	19 49 26.59	10.681	20 30 46.8	+ 1.65
10	19 49 42.91	10.709	20 30 44.1	+1.83	10 22 28.8	19 53 48.53	11.141	20 29 32.5	4.56
11	19 54 5.48	11.165	20 29 25.4	4.74	11 22 29.4	19 58 21.05	11.562	20 27 7.6	7.53
12	19 58 38.52	11.582	20 26 56.1	7.71	12 22 30.1	20 3 3.21	11.945	20 23 30.9	10.54
13	20 3 21.11	11.961	20 23 14.9	10.72	13 22 31.0	20 7 54.18	12.296	20 18 41.5	13.59
14	20 8 12.41	12.308	20 18 21.2	13.77	14 22 32.1	20 12 53.20	12.617	20 12 38.3	16.68
15	20 13 11.67	12.625	20 12 13.7	16.85	15 22 33.2	20 17 59.55	12.908	20 5 20.4	19.79
16	20 18 18.19	12.914	20 4 51.7	19.96	16 22 34.5	20 23 12.59	13.176	19 56 47.4	22.95
17	20 23 31.36	13.179	19 56 14.6	23.12	17 22 35.9	20 28 31.82	13.422	19 46 58.4	26.13
18	20 28 50.62	13.422	19 46 21.7	26.29	18 22 37.3	20 33 56.68	13.647	19 35 53.2	29.31
19	20 34 15.46	13.645	19 35 12.7	29.46	19 22 38.9	20 39 26.71	13.853	19 23 31.3	32.52
20	20 39 45.42	13.849	19 22 47.3	32.66	20 22 40.5	20 45 1.50	14.044	19 9 52.2	35.74
21	20 45 20.09	14.037	19 9 4.8	35.88	21 22 42.2	20 50 40.70	14.219	18 54 55.7	38.97
22	20 50 59.09	14.211	18 54 5.1	39.10	22 22 44.0	20 56 23.92	14.382	18 38 41.7	42.20
23	20 56 42.10	14.372	18 37 48.2	42.32	23 22 45.9	21 2 10.90	14.532	18 21 10.0	45.44
24	21 2 28.84	14.521	18 20 13.8	45.55	24 22 47.8	21 8 1.36	14.671	18 2 20.4	48.68
25	21 8 19.02	14.659	18 1 21.8	48.78	25 22 49.7	21 13 55.07	14.802	17 42 12.9	51.93
26	21 14 12.40	14.788	17 41 12.1	52.02	26 22 51.7	21 19 51.84	14.925	17 20 47.6	55.18
27	21 20 8.81	14.910	17 19 44.8	55.26	27 22 53.8	21 25 51.44	15.040	16 58 4.2	58.44
28	21 26 8.03	15.024	16 56 59.7	58.50	28 22 55.8	21 31 53.74	15.150	16 34 2.9	61.68
29	21 32 9.92	15.133	16 32 57.0	61.73	29 22 57.9	21 37 58.60	15.254	16 8 43.6	64.92
30	21 38 14.35	15.236	-16 7 36.6	+64.96	30 23 0.1	21 44 5.92	15.355	-15 42 6.6	+68.16

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	21 32 9.92	15.133	-16 32 57.0	+61.73	1 22 57.9	21 37 58.60	15.254	-16 8 43.6	+64.92
2	21 38 14.35	15.236	16 7 36.6	64.96	2 23 0.1	21 44 5.92	15.355	15 42 6.6	68.16
3	21 44 21.22	15.336	15 40 58.8	68.19	3 23 2.3	21 50 15.60	15.451	15 14 11.9	71.40
4	21 50 30.43	15.431	15 13 3.4	71.42	4 23 4.6	21 56 27.57	15.546	14 44 59.5	74.63
5	21 56 41.90	15.525	15 43 50.7	74.64	5 23 6.9	22 2 41.79	15.639	14 14 29.6	77.86
6	22 2 55.61	15.617	14 13 20.8	77.86	6 23 9.2	22 8 58.21	15.731	13 42 42.5	81.08
7	22 9 11.50	15.708	13 41 33.9	81.06	7 23 11.6	22 15 16.83	15.821	13 9 38.1	84.28
8	22 15 29.56	15.798	13 8 30.1	84.25	8 23 14.0	22 21 37.60	15.912	12 35 17.0	87.48
9	22 21 49.79	15.889	12 34 9.9	87.43	9 23 16.4	22 28 0.60	16.004	11 59 39.2	90.67
10	22 28 12.21	15.980	11 58 33.4	90.61	10 23 18.9	22 34 25.81	16.098	11 22 45.0	93.84
11	22 34 36.83	16.073	11 21 40.7	93.77	11 23 21.4	22 40 53.32	16.194	10 44 35.1	97.00
12	22 41 3.72	16.168	10 43 32.7	96.91	12 23 23.9	22 47 23.15	16.292	10 5 9.4	100.13
13	22 47 32.92	16.266	10 4 9.3	100.03	13 23 26.5	22 53 55.37	16.394	9 24 28.9	103.23
14	22 54 4.50	16.367	9 23 31.5	103.12	14 23 29.2	23 0 30.06	16.498	8 42 34.2	106.32
15	23 0 38.53	16.470	8 41 39.6	106.19	15 23 31.8	23 7 7.32	16.607	7 59 25.8	109.37
16	23 7 15.10	16.578	7 58 34.5	109.23	16 23 34.5	23 13 47.21	16.719	7 15 4.6	112.39
17	23 13 54.29	16.689	7 14 17.0	112.23	17 23 37.3	23 20 29.84	16.836	6 29 31.6	115.36
18	23 20 36.20	16.805	6 28 48.0	115.18	18 23 40.1	23 27 15.34	16.957	5 42 48.1	118.25
19	23 27 20.95	16.925	5 42 9.0	118.06	19 23 43.0	23 34 3.78	17.082	4 54 55.8	121.10
20	23 34 8.62	17.049	4 54 21.5	120.89	20 23 45.9	23 40 55.27	17.211	4 5 56.1	123.87
21	23 40 59.32	17.177	4 5 27.0	123.64	21 23 48.9	23 47 49.93	17.344	3 15 51.1	126.53
22	23 47 53.15	17.309	3 15 27.6	126.29	22 23 51.9	23 54 47.80	17.480	2 24 43.3	129.09
23	23 54 50.17	17.444	2 24 25.8	128.83	23 23 54.9	0 1 48.98	17.618	1 32 35.7	131.52
24	0 1 50.47	17.581	1 32 24.6	131.25	24 23 58.0	0 8 53.48	17.756	- 0 39 31.6	133.80
25	0 8 54.06	17.718	- 0 39 27.2	133.51					
26	0 16 0.96	17.855	+ 0 14 22.4	135.58	26 0 1.2	0 16 1.32	17.895	+ 0 14 25.2	135.88
27	0 23 11.12	17.991	1 8 59.2	137.45	27 0 4.4	0 23 12.45	18.032	1 9 9.4	137.76
28	0 30 24.49	18.121	2 4 18.2	139.08	28 0 7.7	0 30 26.82	18.163	2 4 36.1	139.41
29	0 37 40.89	18.244	3 0 13.0	140.43	29 0 11.1	0 37 44.26	18.287	3 0 38.9	140.77
30	0 45 0.12	18.356	3 56 36.3	141.46	30 0 14.5	0 45 4.55	18.400	3 57 10.4	141.80
31	0 52 21.87	18.454	4 53 20.3	142.13	31 0 17.9	0 52 27.37	18.499	4 54 3.1	142.47
Apr. 1	0 59 45.75	18.533	5 50 15.6	142.41	1 0 21.4	0 59 52.35	18.579	5 51 6.3	142.75
2	1 7 11.25	18.588	6 47 12.4	142.25	2 0 24.9	1 7 18.95	18.634	6 48 11.2	142.59
3	1 14 37.77	18.616	7 43 59.6	141.60	3 0 28.4	1 14 46.57	18.662	7 45 6.5	141.93
4	1 22 4.56	18.611	8 40 25.2	140.44	4 0 31.9	1 22 14.45	18.656	8 41 39.8	140.75
5	1 29 30.81	18.569	9 36 16.7	138.77	5 0 35.4	1 29 41.76	18.612	9 37 38.5	139.06
6	1 36 55.55	18.485	10 31 21.4	136.52	6 0 38.9	1 37 7.52	18.526	10 32 49.8	136.78
7	1 44 17.73	18.355	11 25 25.3	133.72	7 0 42.3	1 44 30.66	18.394	11 26 59.4	133.94
8	1 51 36.21	18.177	12 18 15.5	130.38	8 0 45.7	1 51 50.04	18.213	12 19 54.6	130.57
9	1 58 49.80	17.947	13 9 39.1	126.49	9 0 49.0	1 59 4.48	17.979	13 11 22.2	126.63
10	2 5 57.24	17.665	13 59 23.4	122.11	10 0 52.1	2 6 12.59	17.691	14 1 9.4	122.21
11	2 12 57.28	17.329	14 47 16.8	117.27	11 0 55.2	2 13 13.20	17.351	14 49 4.6	117.32
12	2 19 48.63	16.942	15 33 9.0	112.01	12 0 58.1	2 20 5.03	16.959	15 34 57.4	112.01
13	2 26 30.08	16.503	16 16 50.6	106.40	13 1 0.9	2 26 46.81	16.514	16 18 38.4	106.35
14	2 33 0.40	16.016	16 58 14.0	100.50	14 1 3.4	2 33 17.32	16.021	17 0 0.1	100.41
15	2 39 18.46	15.482	17 37 12.7	94.35	15 1 5.8	2 39 35.41	15.481	17 38 56.0	94.21
16	2 45 23.18	14.904	18 13 41.1	88.00	16 1 7.9	2 45 40.03	14.897	18 15 20.5	87.82
17	2 51 13.52	14.285	18 47 35.7	81.53	17 1 9.8	2 51 30.11	14.272	18 49 10.3	81.31
18	2 56 48.54	13.628	19 18 53.8	74.97	18 1 11.4	2 57 4.74	13.609	19 20 22.8	74.72
19	3 2 7.36	12.935	19 47 33.5	68.34	19 1 12.8	3 2 23.03	12.910	19 48 56.2	68.06
20	3 7 9.14	12.209	20 13 33.9	61.69	20 1 13.8	3 7 24.14	12.179	20 14 49.6	61.39
21	3 11 53.12	11.452	20 36 54.6	55.04	21 1 14.6	3 12 7.34	11.418	20 38 2.8	54.72
22	3 16 18.62	10.668	20 57 35.8	48.40	22 1 15.1	3 16 31.96	10.629	20 58 36.1	48.07
23	3 20 24.95	9.856	21 15 38.3	41.81	23 1 15.2	3 20 37.28	9.813	21 16 30.5	41.47
24	3 24 11.53	9.022	21 31 3.0	35.25	24 1 15.0	3 24 22.80	8.976	21 31 46.9	34.90
25	3 27 37.83	8.167	21 43 50.5	28.74	25 1 14.5	3 27 47.94	8.118	21 44 26.0	28.39
26	3 30 43.38	7.292	21 54 2.6	22.27	26 1 13.7	3 30 52.30	7.242	21 54 29.7	21.93
27	3 33 27.73	6.402	22 1 40.1	15.86	27 1 12.4	3 33 35.43	6.351	22 1 59.0	15.53
28	3 35 50.60	5.502	22 6 44.5	9.52	28 1 10.7	3 35 57.08	5.451	22 6 55.5	9.20
29	3 37 51.74	4.593	22 9 17.4	+ 3.23	29 1 8.8	3 37 56.99	4.543	22 9 20.9	+ 2.93
30	3 39 31.03	3.681	22 9 20.3	- 2.98	30 1 6.6	3 39 35.09	3.633	22 9 16.8	- 3.26
31	3 40 48.46	+2.772	+22 6 55.0	- 9.11	31 1 4.0	3 40 51.39	+2.727	+22 6 45.1	- 9.36

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	12 3 40.39	+1.920	- 4 28 26.3	-32.20	1 1 21.8	12 3 42.98	+1.873	- 4 29 10.0	-31.76
2	12 4 17.20	1.141	4 39 58.1	25.37	2 1 18.5	12 4 18.66	1.095	4 40 31.1	24.92
3	12 4 34.85	+0.324	4 48 40.0	18.03	3 1 14.8	12 4 35.22	+0.280	4 49 2.3	17.59
4	12 4 32.46	-0.528	4 54 19.2	10.15	4 1 10.8	12 4 31.81	-0.569	4 54 31.0	9.73
5	12 4 9.27	1.409	4 56 43.3	- 1.77	5 1 6.5	12 4 7.69	1.446	4 56 45.1	- 1.37
6	12 3 24.64	2.312	4 55 40.1	+ 7.11	6 1 1.8	12 3 22.23	2.344	4 55 32.6	+ 7.47
7	12 2 18.18	3.228	4 50 57.9	16.47	7 0 56.8	12 2 15.11	3.252	4 50 42.1	16.78
8	12 0 49.73	4.142	4 42 26.6	26.21	8 0 51.4	12 0 46.16	4.158	4 42 4.0	26.46
9	11 58 59.53	5.037	4 29 58.7	36.17	9 0 45.6	11 58 55.69	5.043	4 29 31.0	36.34
10	11 56 48.26	5.894	4 13 29.3	46.28	10 0 39.5	11 56 44.37	5.891	4 12 58.7	46.35
11	11 54 17.12	6.689	3 52 58.1	56.28	11 0 33.0	11 54 13.43	6.675	3 52 27.0	56.25
12	11 51 27.92	7.393	3 28 30.2	65.98	12 0 26.3	11 51 24.67	7.370	3 28 1.2	65.84
13	11 48 23.11	7.985	3 0 16.6	75.05	13 0 19.3	11 48 20.53	7.953	2 59 52.4	74.80
14	11 45 5.82	8.427	2 28 35.7	83.21	14 0 12.1	11 45 4.12	8.388	2 28 18.8	82.86
15	11 41 39.87	8.704	1 53 53.4	90.10	15 0 4.8	11 41 39.20	8.661	1 53 46.1	89.66
					15 23 57.4	11 38 10.04	8.738	1 16 47.7	94.93
16	11 38 9.65	8.782	1 16 43.5	95.43	16 23 50.0	11 34 41.46	8.612	- 0 38 2.8	98.48
17	11 34 40.01	8.654	- 0 37 46.2	99.00	17 23 42.7	11 31 18.59	8.266	+ 0 1 43.3	100.03
18	11 31 16.19	8.301	+ 0 2 12.3	100.53	18 23 35.6	11 28 6.65	7.697	0 41 41.2	99.50
19	11 28 3.50	7.723	0 42 21.9	99.95	19 23 28.7	11 25 10.84	6.921	1 20 59.7	96.75
20	11 25 7.21	6.934	1 21 50.5	97.11	20 23 22.2	11 22 35.99	5.952	1 58 48.6	92.01
21	11 22 32.23	5.950	1 59 46.8	92.25	21 23 16.1	11 20 26.51	4.812	2 34 20.0	85.32
22	11 20 22.99	4.794	2 35 22.6	85.43	22 23 10.5	11 18 46.14	3.530	3 6 50.1	76.93
23	11 18 43.24	3.497	3 7 53.7	76.90	23 23 5.4	11 17 37.89	2.141	3 35 41.5	67.12
24	11 17 35.97	2.094	3 36 42.6	66.95	24 23 0.9	11 17 3.97	-0.679	4 0 23.3	56.19
25	11 17 3.31	-0.620	4 1 18.5	55.88	25 22 57.0	11 17 5.61	+0.821	4 20 31.8	44.41
26	11 17 6.51	+0.889	4 21 18.2	43.99	26 22 53.7	11 17 43.40	2.327	4 35 50.6	32.09
27	11 17 46.01	2.400	4 36 25.8	31.59	27 22 51.0	11 18 57.05	3.804	4 46 10.5	19.54
28	11 19 1.48	3.880	4 46 32.6	18.97	28 22 48.9	11 20 45.61	5.232	4 51 28.5	+ 6.97
29	11 20 51.87	5.307	4 51 36.3	+ 6.37	29 22 47.3	11 23 7.59	6.586	4 51 46.9	- 5.36
30	11 23 15.62	6.658	4 51 40.0	- 5.98	30 22 46.3	11 26 1.01	7.850	4 47 13.8	17.32
Oct. 1	11 26 10.71	7.916	4 46 52.0	17.92	1 22 45.7	11 29 23.54	9.010	4 38 0.7	28.68
2	11 29 34.75	9.069	4 37 24.7	29.25	2 22 45.6	11 33 12.62	10.062	4 24 23.0	39.35
3	11 33 25.14	10.112	4 23 33.7	39.88	3 22 45.9	11 37 25.58	11.000	4 6 37.8	49.28
4	11 37 39.20	11.041	4 5 36.5	49.75	4 22 46.5	11 41 59.69	11.826	3 45 3.9	58.37
5	11 42 14.20	11.858	3 43 52.1	58.77	5 22 47.4	11 46 52.32	12.541	3 20 2.5	66.59
6	11 47 7.50	12.565	3 18 41.8	66.93	6 22 48.6	11 52 0.92	13.155	2 51 54.4	73.97
7	11 52 16.57	13.171	2 50 26.3	74.24	7 22 50.0	11 57 23.06	13.675	2 20 59.9	80.45
8	11 57 38.97	13.683	2 19 26.0	80.66	8 22 51.7	12 2 56.57	14.106	1 47 39.1	86.13
9	12 3 12.62	14.108	1 46 1.0	86.28	9 22 53.4	12 8 39.52	14.461	1 12 11.8	91.03
10	12 8 55.56	14.458	1 10 30.7	91.12	10 22 55.3	12 14 30.19	14.749	+ 0 34 55.9	95.18
11	12 14 46.08	14.741	+ 0 33 13.3	95.22	11 22 57.3	12 20 27.03	14.978	- 0 3 51.6	98.66
12	12 20 42.67	14.966	- 0 5 34.6	98.66	12 22 59.4	12 26 28.76	15.158	0 43 54.8	101.51
13	12 26 44.06	15.142	0 45 37.3	101.47	13 23 1.5	12 32 34.28	15.295	1 24 59.6	103.79
14	12 32 49.16	15.277	1 26 40.6	103.72	14 23 3.7	12 38 42.64	15.397	2 6 53.0	105.58
15	12 38 57.06	15.377	2 8 32.0	105.48	15 23 6.0	12 44 53.10	15.471	2 49 23.8	106.90
16	12 45 7.02	15.449	2 51 0.0	106.78	16 23 8.2	12 51 5.05	15.522	3 32 21.4	107.82
17	12 51 18.43	15.499	3 33 54.4	107.68	17 23 10.5	12 57 18.00	15.553	4 15 36.6	108.40
18	12 57 30.81	15.530	4 17 5.9	108.24	18 23 12.7	13 3 31.52	15.572	4 59 1.1	108.61
19	13 3 43.77	15.548	5 0 26.5	108.44	19 23 15.0	13 9 45.38	15.580	5 42 27.7	108.57
20	13 9 57.04	15.556	5 43 49.0	108.39	20 23 17.3	13 15 59.32	15.581	6 25 50.5	108.28
21	13 16 10.39	15.556	6 27 7.4	108.09	21 23 19.6	13 22 13.21	15.575	7 9 3.2	107.76
22	13 22 23.68	15.550	7 10 15.7	107.57	22 23 21.9	13 28 26.90	15.567	7 52 1.2	107.04
23	13 28 36.78	15.542	7 53 9.1	106.85	23 23 24.1	13 34 40.40	15.558	8 34 39.9	106.15
24	13 34 49.69	15.533	8 35 43.2	105.96	24 23 26.4	13 40 53.69	15.549	9 16 55.3	105.11
25	13 41 2.38	15.524	9 17 54.0	104.92	25 23 28.7	13 47 6.77	15.541	9 58 44.0	103.93
26	13 47 14.87	15.516	9 59 38.1	103.74	26 23 31.0	13 53 19.66	15.535	10 40 3.0	102.63
27	13 53 27.17	15.510	10 40 52.6	102.44	27 23 33.2	13 59 32.46	15.531	11 20 49.3	101.21
28	13 59 39.38	15.507	11 21 34.4	101.03	28 23 35.5	14 5 45.19	15.530	12 1 0.5	99.70
29	14 5 51.53	15.506	12 1 41.2	99.52	29 23 37.7	14 11 57.96	15.533	12 40 34.2	98.10
30	14 12 3.71	15.509	12 41 10.5	97.92	30 23 40.0	14 18 10.84	15.541	13 19 28.3	96.40
31	14 18 16.01	15.517	-13 20 0.4	-96.23	31 23 42.3	14 24 23.96	15.552	-13 57 40.9	-94.63

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	14 24 28.55	15.528	−13 58 8.8	−94.46	1 23 44.6	14 30 37.39	15.568	−14 35 10.2	−92.80
2	14 30 41.39	15.543	14 35 34.0	92.63	2 23 46.8	14 36 51.25	15.588	15 11 54.4	90.88
3	14 36 54.66	15.563	15 12 14.3	90.72	3 23 49.1	14 43 5.63	15.612	15 47 52.0	88.91
4	14 43 8.45	15.587	15 48 8.1	88.75	4 23 51.4	14 49 20.62	15.639	16 23 1.5	86.87
5	14 49 22.85	15.614	16 23 13.9	86.72	5 23 53.7	14 55 36.34	15.671	16 57 21.3	84.77
6	14 55 37.97	15.646	16 57 30.1	84.62	6 23 56.1	15 1 52.85	15.706	17 30 50.0	82.61
7	15 1 53.88	15.681	17 30 55.4	82.47	7 23 58.4	15 8 10.25	15.745	18 3 26.3	80.39
8	15 8 10.67	15.719	18 3 28.4	80.26					
9	15 14 28.42	15.761	18 35 7.5	78.00	9 0 0.8	15 14 28.62	15.787	18 35 8.5	78.13
10	15 20 47.22	15.807	19 5 51.8	75.68	10 0 3.1	15 20 48.05	15.833	19 5 55.8	75.80
11	15 27 7.10	15.852	19 35 39.5	73.29	11 0 5.5	15 27 8.56	15.878	19 35 46.3	73.40
12	15 33 28.15	15.902	20 4 29.4	70.85	12 0 7.9	15 33 30.25	15.929	20 4 38.8	70.95
13	15 39 50.39	15.954	20 32 20.1	68.37	13 0 10.4	15 39 53.15	15.981	20 32 32.1	68.47
14	15 46 13.86	16.004	20 59 10.5	65.82	14 0 12.8	15 46 17.28	16.032	20 59 24.6	65.91
15	15 52 38.60	16.057	21 24 58.8	63.20	15 0 15.3	15 52 42.69	16.085	21 25 14.9	63.28
16	15 59 4.59	16.110	21 49 43.9	60.54	16 0 17.8	15 59 9.37	16.139	21 50 1.9	60.61
17	16 5 31.86	16.162	22 13 24.3	57.82	17 0 20.3	16 5 37.33	16.191	22 13 43.9	57.88
18	16 12 0.38	16.214	22 35 58.6	55.03	18 0 22.8	16 12 6.55	16.243	22 36 19.5	55.08
19	16 18 30.10	16.263	22 57 25.3	52.19	19 0 25.4	16 18 36.99	16.293	22 57 47.4	52.23
20	16 25 0.99	16.311	23 17 43.2	49.29	20 0 28.0	16 25 8.60	16.341	23 18 6.2	49.32
21	16 31 33.00	16.355	23 36 50.6	46.32	21 0 30.6	16 31 41.33	16.385	23 37 14.2	46.34
22	16 38 6.00	16.394	23 54 46.1	43.30	22 0 33.2	16 38 15.07	16.425	23 55 10.1	43.31
23	16 44 39.89	16.429	24 11 28.6	40.22	23 0 35.8	16 44 49.70	16.460	24 11 52.6	40.22
24	16 51 14.56	16.458	24 26 56.0	37.07	24 0 38.5	16 51 25.11	16.489	24 27 19.8	37.05
25	16 57 49.82	16.479	24 41 7.3	33.86	25 0 41.1	16 58 1.11	16.510	24 41 30.5	33.83
26	17 4 25.47	16.491	24 54 0.9	30.60	26 0 43.8	17 4 37.50	16.521	24 54 23.2	30.56
27	17 11 1.30	16.493	25 5 35.7	27.28	27 0 46.4	17 11 14.06	16.523	25 5 56.8	27.22
28	17 17 37.03	16.483	25 15 49.9	23.90	28 0 49.1	17 17 50.51	16.513	25 16 9.5	23.83
29	17 24 12.37	16.459	25 24 42.5	20.47	29 0 51.8	17 24 26.56	16.488	25 25 0.1	20.38
30	17 30 46.96	16.420	25 32 12.1	16.99	30 0 54.4	17 31 1.83	16.448	25 32 27.4	16.89
Dec. 1	17 37 20.40	16.363	25 38 17.6	13.46	1 0 57.0	17 37 35.94	16.390	25 38 30.3	13.34
2	17 43 52.21	16.285	25 42 58.0	9.89	2 0 59.6	17 44 8.38	16.310	25 43 7.7	9.76
3	17 50 21.87	16.183	25 46 12.2	6.29	3 1 2.1	17 50 38.63	16.206	25 46 18.6	6.15
4	17 56 48.79	16.055	25 47 59.7	− 2.66	4 1 4.7	17 57 6.09	16.076	25 48 2.5	− 2.50
5	18 3 12.25	15.895	25 48 19.7	+ 0.99	5 1 7.1	18 3 30.02	15.913	25 48 18.5	+ 1.16
6	18 9 31.48	15.702	25 47 12.0	4.65	6 1 9.5	18 9 49.65	15.717	25 47 6.5	4.83
7	18 15 45.62	15.470	25 44 36.7	8.29	7 1 11.8	18 16 4.11	15.481	25 44 26.7	8.48
8	18 21 53.67	15.192	25 40 34.2	11.92	8 1 14.0	18 22 12.39	15.199	25 40 19.4	12.12
9	18 27 54.44	14.863	25 35 4.9	15.51	9 1 16.0	18 28 13.26	14.864	25 34 45.2	15.72
10	18 33 46.64	14.477	25 28 10.4	19.02	10 1 18.0	18 34 5.42	14.473	25 27 45.6	19.23
11	18 39 28.83	14.027	25 19 52.5	22.45	11 1 19.7	18 39 47.44	14.017	25 19 22.6	22.66
12	18 44 59.33	13.502	25 10 13.7	25.76	12 1 21.2	18 45 17.58	13.484	25 9 38.7	25.97
13	18 50 16.27	12.896	24 59 17.1	28.92	13 1 22.6	18 50 33.99	12.869	24 58 37.2	29.12
14	18 55 17.61	12.197	24 47 7.0	31.88	14 1 23.6	18 55 34.58	12.161	24 46 22.5	32.06
15	19 0 0.93	11.394	24 33 48.6	34.61	15 1 24.4	19 0 16.91	11.349	24 32 59.8	34.77
16	19 4 23.63	10.478	24 19 27.9	37.06	16 1 24.8	19 4 38.41	10.423	24 18 35.5	37.20
17	19 8 22.85	9.435	24 4 12.3	39.18	17 1 24.9	19 8 36.16	9.369	24 3 16.8	39.29
18	19 11 55.40	8.255	23 48 10.1	40.93	18 1 24.4	19 12 6.97	8.178	23 47 12.5	41.00
19	19 14 57.92	6.930	23 31 31.2	42.25	19 1 23.5	19 15 7.52	6.844	23 30 32.4	42.28
20	19 17 26.85	5.454	23 14 26.0	43.10	20 1 22.0	19 17 34.26	5.359	23 13 27.0	43.08
21	19 19 18.48	3.824	22 57 6.7	43.44	21 1 19.9	19 19 23.53	3.724	22 56 8.8	43.37
22	19 20 29.17	2.043	22 39 45.5	43.25	22 1 17.1	19 20 31.75	1.941	22 38 49.9	43.13
23	19 20 55.47	+0.128	22 22 35.1	42.53	23 1 13.5	19 20 55.59	+0.028	22 21 43.0	42.36
24	19 20 34.43	−1.897	22 5 48.3	41.29	24 1 9.2	19 20 32.29	−1.989	22 5 0.7	41.08
25	19 19 23.88	3.990	21 49 37.1	39.58	25 1 4.1	19 19 19.58	4.068	21 48 54.9	39.34
26	19 17 22.80	6.099	21 34 12.0	37.44	26 0 58.1	19 17 16.84	6.155	21 33 35.8	37.18
27	19 14 31.69	8.147	21 19 42.6	34.96	27 0 51.3	19 14 24.69	8.176	21 19 12.7	34.70
28	19 10 52.92	10.[illegible]53	21 6 16.1	32.22	28 0 43.7	19 10 45.55	10.053	21 5 52.6	31.96
29	19 6 31.03	11.727	20 53 57.8	29.27	29 0 35.5	19 6 24.06	11.695	20 53 40.5	29.02
30	19 1 32.69	13.075	20 42 52.2	26.17	30 0 26.6	19 1 26.87	13.015	20 42 40.6	25.95
31	18 56 6.58	14.026	20 33 2.2	22.97	31 0 17.3	18 56 2.51	13.944	20 32 55.6	22.78
32	18 50 23.00	14.526	−20 24 30.7	+19.63	32 0 7.7	18 50 21.11	14.431	−20 24 28.2	+19.48

VENUS, 1871.

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 1	19 13 10.91	13.626	-23 18 54.5	+18.85	1 0 29.6	19 13 17.63	13.640	-23 18 45.2	+18.90
2	19 18 37.58	13.597	23 11 0.5	20.64	2 0 31.1	19 18 44.63	13.610	23 10 49.9	20.70
3	19 24 3.53	13.566	23 2 23.8	22.41	3 0 32.6	19 24 10.90	13.579	23 2 11.7	22.48
4	19 29 28.71	13.533	22 53 4.7	24.17	4 0 34.1	19 29 36.40	13.546	22 52 51.0	24.24
5	19 34 53.09	13.498	22 43 3.6	25.91	5 0 35.5	19 35 1.09	13.511	22 42 48.3	25.98
6	19 40 16.61	13.461	22 32 21.0	27.63	6 0 37.0	19 40 24.90	13.473	22 32 4.0	27.71
7	19 45 39.20	13.422	22 20 57.3	29.33	7 0 38.4	19 45 47.79	13.434	22 20 38.6	29.41
8	19 51 0.84	13.382	22 8 53.1	31.01	8 0 39.8	19 51 9.72	13.393	22 8 32.5	31.09
9	19 56 21.50	13.340	21 56 8.8	32.68	9 0 41.2	19 56 30.67	13.351	21 55 46.3	32.76
10	20 1 41.13	13.297	21 42 44.8	34.32	10 0 42.6	20 1 50.58	13.307	21 42 20.4	34.40
11	20 6 59.70	13.251	21 28 41.8	35.93	11 0 44.0	20 7 9.41	13.262	21 28 15.4	36.01
12	20 12 17.17	13.205	21 14 0.3	37.52	12 0 45.3	20 12 27.14	13.216	21 13 32.0	37.60
13	20 17 33.52	13.157	20 58 41.1	39.08	13 0 46.7	20 17 43.75	13.168	20 58 10.7	39.17
14	20 22 48.72	13.109	20 42 44.6	40.62	14 0 48.0	20 22 59.20	13.119	20 42 12.1	40.71
15	20 28 2.75	13.060	20 26 11.4	42.14	15 0 49.3	20 28 13.47	13.070	20 25 36.8	42.22
16	20 33 15.58	13.009	20 9 2.2	43.62	16 0 50.5	20 33 26.54	13.019	20 8 25.5	43.71
17	20 38 27.19	12.958	19 51 17.8	45.07	17 0 51.8	20 38 38.38	12.967	19 50 38.9	45.17
18	20 43 37.56	12.906	19 32 58.8	46.50	18 0 53.0	20 43 48.97	12.915	19 32 17.7	46.60
19	20 48 46.67	12.853	19 14 5.8	47.91	19 0 54.2	20 48 58.29	12.862	19 13 22.5	48.00
20	20 53 54.52	12.800	18 54 39.5	49.28	20 0 55.4	20 54 6.34	12.809	18 53 54.0	49.37
21	20 59 1.10	12.747	18 34 40.7	50.62	21 0 56.6	20 59 13.11	12.755	18 33 53.0	50.71
22	21 4 6.38	12.693	18 14 10.1	51.92	22 0 57.7	21 4 18.59	12.701	18 13 20.2	52.02
23	21 9 10.37	12.639	17 53 8.5	53.20	23 0 58.9	21 9 22.77	12.647	17 52 16.3	53.30
24	21 14 13.07	12.585	17 31 36.6	54.45	24 1 0.0	21 14 25.64	12.592	17 30 42.2	54.54
25	21 19 14.46	12.531	17 9 35.2	55.66	25 1 1.0	21 19 27.20	12.538	17 8 38.6	55.76
26	21 24 14.55	12.477	16 47 5.1	56.84	26 1 2.1	21 24 27.46	12.484	16 46 6.2	56.94
27	21 29 13.35	12.423	16 24 7.0	57.99	27 1 3.1	21 29 26.42	12.430	16 23 5.9	58.08
28	21 34 10.86	12.370	16 0 41.7	59.11	28 1 4.1	21 34 24.09	12.376	15 59 38.5	59.20
29	21 39 7.10	12.317	15 36 50.0	60.20	29 1 5.1	21 39 20.48	12.323	15 35 44.6	60.29
30	21 44 2.07	12.265	15 12 32.6	61.25	30 1 6.1	21 44 15.60	12.271	15 11 25.1	61.34
31	21 48 55.81	12.213	14 47 50.4	62.27	31 1 7.1	21 49 9.46	12.218	14 46 40.7	62.36
Feb. 1	21 53 48.31	12.162	14 22 44.0	63.26	1 1 8.0	21 54 2.09	12.167	14 21 32.3	63.34
2	21 58 39.59	12.112	13 57 14.3	64.21	2 1 8.9	21 58 53.50	12.117	13 56 0.6	64.29
3	22 3 29.68	12.063	13 31 22.2	65.12	3 1 9.8	22 3 43.71	12.068	13 30 6.5	65.21
4	22 8 18.61	12.015	13 5 8.5	66.01	4 1 10.7	22 8 32.75	12.020	13 3 50.7	66.10
5	22 13 6.40	11.968	12 38 33.8	66.87	5 1 11.5	22 13 20.66	11.973	12 37 14.1	66.95
6	22 17 53.08	11.922	12 11 38.9	67.70	6 1 12.4	22 18 7.46	11.927	12 10 17.3	67.78
7	22 22 38.68	11.878	11 44 24.6	68.49	7 1 13.2	22 22 53.17	11.882	11 43 1.1	68.57
8	22 27 23.22	11.834	11 16 51.7	69.25	8 1 14.0	22 27 37.82	11.839	11 15 26.3	69.33
9	22 32 6.73	11.792	10 49 1.0	69.97	9 1 14.8	22 32 21.44	11.796	10 47 33.7	70.05
10	22 36 49.26	11.752	10 20 53.2	70.67	10 1 15.5	22 37 4.06	11.756	10 19 24.1	70.74
11	22 41 30.83	11.713	9 52 29.1	71.34	11 1 16.3	22 41 45.72	11.716	9 50 58.3	71.41
12	22 46 11.47	11.675	9 23 49.4	71.97	12 1 17.0	22 46 26.45	11.678	9 22 17.0	72.04
13	22 50 51.22	11.639	8 54 55.0	72.57	13 1 17.7	22 51 6.30	11.642	8 53 20.9	72.63
14	22 55 30.13	11.604	8 25 46.6	73.13	14 1 18.4	22 55 45.30	11.608	8 24 10.9	73.20
15	23 0 8.22	11.571	7 56 24.9	73.67	15 1 19.1	23 0 23.48	11.574	7 54 47.7	73.73
16	23 4 45.53	11.539	7 26 50.8	74.17	16 1 19.8	23 5 0.87	11.542	7 25 12.1	74.23
17	23 9 22.08	11.508	6 57 5.0	74.64	17 1 20.5	23 9 37.51	11.512	6 55 24.8	74.70
18	23 13 57.91	11.479	6 27 8.3	75.08	18 1 21.1	23 14 13.43	11.483	6 25 26.7	75.13
19	23 18 33.07	11.452	5 57 1.5	75.49	19 1 21.8	23 18 48.68	11.455	5 55 18.6	75.54
20	23 23 7.61	11.426	5 26 45.3	75.86	20 1 22.4	23 23 23.30	11.430	5 25 1.1	75.91
21	23 27 41.55	11.402	4 56 20.5	76.20	21 1 23.0	23 27 57.32	11.406	4 54 35.0	76.26
22	23 32 14.92	11.379	4 25 47.8	76.51	22 1 23.7	23 32 30.78	11.383	4 24 1.0	76.57
23	23 36 47.76	11.358	3 55 8.0	76.79	23 1 24.3	23 37 3.72	11.362	3 53 20.0	76.84
24	23 41 20.12	11.339	3 24 21.9	77.04	24 1 24.9	23 41 36.17	11.343	3 22 32.8	77.09
25	23 45 52.04	11.322	2 53 30.2	77.26	25 1 25.4	23 46 8.18	11.325	2 51 40.1	77.30
26	23 50 23.57	11.306	2 22 33.8	77.44	26 1 26.0	23 50 39.78	11.309	2 20 42.7	77.48
27	23 54 54.73	11.291	1 51 33.3	77.59	27 1 26.6	23 55 11.02	11.295	1 49 41.3	77.63
28	23 59 25.56	11.278	1 20 29.6	77.71	28 1 27.2	23 59 41.95	11.282	1 18 36.7	77.75
29	0 3 56.11	11.268	0 49 23.3	77.80	29 1 27.7	0 4 12.59	11.272	0 47 29.6	77.84
30	0 8 26.44	11.259	- 0 18 15.3	77.86	30 1 28.3	0 8 43.00	11.263	- 0 16 20.7	77.90
31	0 12 56.57	11.252	+ 0 12 53.8	+77.89	31 1 28.9	0 13 13.23	11.256	+ 0 14 49.2	+77.92

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	iff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	0 3 56.11	11.268	− 0 49 23.3	+77.80	1 1 27.7	0 4 12.59	11.272	− 0 47 29.6	+77.84
2	0 8 26.44	11.259	− 0 18 15.3	77.86	2 1 28.3	0 8 43.00	11.263	− 0 16 20.7	77.90
3	0 12 56.57	11.252	+ 0 12 53.8	77.89	3 1 28.9	0 13 13.23	11.256	+ 0 14 49.2	77.92
4	0 17 26.54	11.247	0 44 3.3	77.89	4 1 29.4	0 17 43.30	11.251	0 45 59.4	77.92
5	0 21 56.41	11.243	1 15 12.4	77.86	5 1 30.0	0 22 13.27	11.247	1 17 9.1	77.88
6	0 26 26.22	11.242	1 46 20.3	77.79	6 1 30.5	0 26 43.18	11.246	1 48 17.6	77.82
7	0 30 56.01	11.242	2 17 26.3	77.70	7 1 31.1	0 31 13.08	11.246	2 19 24.2	77.73
8	0 35 25.83	11.244	2 48 29.8	77.58	8 1 31.6	0 35 43.00	11.248	2 50 28.2	77.60
9	0 39 55.72	11.248	3 19 30.0	77.43	9 1 32.2	0 40 13.00	11.252	3 21 28.9	77.45
10	0 44 25.73	11.254	3 50 26.1	77.24	10 1 32.7	0 44 43.12	11.258	3 52 25.5	77.26
11	0 48 55.90	11.261	4 21 17.5	77.03	11 1 33.3	0 49 13.41	11.266	4 23 17.3	77.05
12	0 53 26.27	11.270	4 52 3.4	76.79	12 1 33.9	0 53 43.90	11.276	4 54 3.5	76.80
13	0 57 56.89	11.281	5 22 43.1	76.52	13 1 34.4	0 58 14.64	11.287	5 24 43.5	76.53
14	1 2 27.79	11.294	5 53 16.0	76.21	14 1 35.0	1 2 45.67	11.299	5 55 16.6	76.22
15	1 6 59.01	11.308	6 23 41.2	75.87	15 1 35.6	1 7 17.02	11.314	6 25 42.0	75.89
16	1 11 30.60	11.324	6 53 58.0	75.51	16 1 36.2	1 11 48.75	11.330	6 55 59.0	75.52
17	1 16 2.60	11.342	7 24 5.7	75.12	17 1 36.8	1 16 20.89	11.348	7 26 6.8	75.13
18	1 20 35.04	11.361	7 54 3.6	74.70	18 1 37.4	1 20 53.48	11.367	7 56 4.8	74.70
19	1 25 7.96	11.382	8 23 51.0	74.24	19 1 38.0	1 25 26.54	11.388	8 25 52.2	74.24
20	1 29 41.39	11.404	8 53 27.0	73.75	20 1 38.6	1 30 0.12	11.410	8 55 28.2	73.75
21	1 34 15.37	11.428	9 22 51.0	73.23	21 1 39.2	1 34 34.26	11.434	9 24 52.1	73.23
22	1 38 49.93	11.453	9 52 2.2	72.68	22 1 39.8	1 39 8.98	11.459	9 54 3.1	72.68
23	1 43 25.11	11.479	10 20 59.7	72.10	23 1 40.5	1 43 44.33	11.486	10 23 0.4	72.09
24	1 48 0.93	11.506	10 49 42.9	71.49	24 1 41.1	1 48 20.33	11.514	10 51 43.3	71.48
25	1 52 37.43	11.535	11 18 10.9	70.85	25 1 41.8	1 52 57.00	11.543	11 20 11.0	70.83
26	1 57 14.63	11.565	11 46 23.1	70.17	26 1 42.5	1 57 34.38	11.573	11 48 22.9	70.15
27	2 1 52.56	11.596	12 14 18.7	69.46	27 1 43.2	2 2 12.50	11.604	12 16 18.1	69.44
28	2 6 31.25	11.628	12 41 56.9	68.72	28 1 43.9	2 6 51.39	11.636	12 43 55.9	68.70
29	2 11 10.73	11.662	13 9 17.1	67.95	29 1 44.6	2 11 31.06	11.670	13 11 15.5	67.93
30	2 15 51.02	11.696	13 36 18.4	67.15	30 1 45.3	2 16 11.55	11.704	13 38 16.2	67.13
31	2 20 32.15	11.732	14 3 0.1	66.32	31 1 46.1	2 20 52.89	11.740	14 4 57.3	66.29
Apr. 1	2 25 14.14	11.768	14 29 21.4	65.45	1 1 46.8	2 25 35.09	11.777	14 31 17.9	65.42
2	2 29 57.01	11.805	14 55 21.6	64.56	2 1 47.6	2 30 18.18	11.814	14 57 17.3	64.52
3	2 34 40.78	11.843	15 21 0.0	63.63	3 1 48.4	2 35 2.18	11.852	15 22 54.8	63.60
4	2 39 25.48	11.882	15 46 15.8	62.67	4 1 49.2	2 39 47.11	11.891	15 48 9.7	62.64
5	2 44 11.12	11.922	16 11 8.2	61.69	5 1 50.0	2 44 32.98	11.931	16 13 1.3	61.65
6	2 48 57.71	11.962	16 35 36.7	60.68	6 1 50.9	2 49 19.81	11.972	16 37 28.8	60.63
7	2 53 45.27	12.002	16 59 40.6	59.63	7 1 51.7	2 54 7.62	12.012	17 1 31.6	59.59
8	2 58 33.82	12.044	17 23 19.0	58.56	8 1 52.6	2 58 56.42	12.054	17 25 8.8	58.51
9	3 3 23.37	12.086	17 46 31.2	57.46	9 1 53.5	3 3 46.23	12.097	17 48 19.8	57.40
10	3 8 13.94	12.128	18 9 16.6	56.32	10 1 54.4	3 8 37.06	12.139	18 11 3.9	56.27
11	3 13 5.52	12.170	18 31 34.5	55.16	11 1 55.3	3 13 28.91	12.182	18 33 20.4	55.10
12	3 17 58.12	12.213	18 53 24.1	53.97	12 1 56.2	3 18 21.78	12.224	19 55 8.5	53.91
13	3 22 51.74	12.255	19 14 44.8	52.75	13 1 57.2	3 23 15.67	12.267	19 16 27.7	52.69
14	3 27 46.38	12.298	19 35 35.9	51.50	14 1 58.1	3 28 10.59	12.310	19 37 17.2	51.43
15	3 32 42.03	12.340	19 55 56.7	50.22	15 1 59.1	3 33 6.53	12.352	19 57 36.3	50.16
16	3 37 38.70	12.382	20 15 46.5	48.92	16 2 0.1	3 38 3.50	12.395	20 17 24.4	48.85
17	3 42 36.37	12.424	20 35 4.8	47.59	17 2 1.2	3 43 1.47	12.436	20 36 40.8	47.51
18	3 47 35.03	12.465	20 53 50.9	46.24	18 2 2.2	3 48 0.42	12.477	20 55 24.9	46.15
19	3 52 34.66	12.504	21 12 4.0	44.85	19 2 3.2	3 53 0.34	12.517	21 13 36.0	44.76
20	3 57 35.23	12.543	21 29 43.5	43.44	20 2 4.3	3 58 1.21	12.556	21 31 13.4	43.35
21	4 2 36.73	12.581	21 46 48.9	42.01	21 2 5.4	4 3 3.02	12.594	21 48 16.6	41.91
22	4 7 39.13	12.618	22 3 19.6	40.55	22 2 6.5	4 8 5.74	12.631	22 4 44.9	40.45
23	4 12 42.40	12.654	22 19 14.9	39.06	23 2 7.6	4 13 9.32	12.667	22 20 37.8	38.96
24	4 17 46.52	12.689	22 34 34.2	37.55	24 2 8.7	4 18 13.75	12.702	22 35 54.6	37.44
25	4 22 51.45	12.722	22 49 17.0	36.02	25 2 9.9	4 23 18.99	12.735	22 50 34.8	35.91
26	4 27 57.15	12.753	23 3 22.8	34.46	26 2 11.0	4 28 25.00	12.766	23 4 37.8	34.35
27	4 33 3.58	12.783	23 16 51.0	32.89	27 2 12.2	4 33 31.75	12.796	23 18 3.3	32.77
28	4 38 10.70	12.811	23 29 41.3	31.30	28 2 13.4	4 38 39.19	12.824	23 30 50.7	31.17
29	4 43 18.48	12.837	23 41 53.0	29.68	29 2 14.6	4 43 47.28	12.850	23 42 59.5	29.55
30	4 48 26.86	12.861	23 53 25.8	28.05	30 2 15.8	4 48 55.97	12.874	23 54 29.2	27.92
31	4 53 35.80	12.883	+24 4 19.3	+26.40	31 2 17.0	4 54 5.21	12.896	+24 5 19.5	+26.27

VENUS, 1871.

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	4 53 35.80	12.883	+24 4 19.3	+26.40	1 2 17.0	4 54 5.21	12.896	+24 5 19.5	+26.27
2	4 58 45.24	12.903	24 14 33.1	24.74	2 2 18.2	4 59 14.96	12.916	24 15 29.9	24.60
3	5 3 55.14	12.921	24 24 6.8	23.06	3 2 19.4	5 4 25.17	12.934	24 25 0.3	22.92
4	5 9 5.46	12.937	24 33 0.1	21.37	4 2 20.6	5 9 35.78	12.950	24 33 50.1	21.22
5	5 14 16.13	12.951	24 41 12.7	19.67	5 2 21.9	5 14 46.75	12.963	24 41 59.0	19.52
6	5 19 27.09	12.962	24 48 44.2	17.96	6 2 23.1	5 19 58.01	12.974	24 49 26.8	17.80
7	5 24 38.29	12.971	24 55 34.5	16.24	7 2 24.4	5 25 9.50	12.983	24 56 13.4	16.08
8	5 29 49.68	12.978	25 1 43.4	14.51	8 2 25.6	5 30 21.18	12.990	25 2 18.4	14.34
9	5 35 1.20	12.982	25 7 10.7	12.77	9 2 26.9	5 35 32.98	12.993	25 7 41.7	12.60
10	5 40 12.79	12.984	25 11 56.1	11.02	10 2 28.1	5 40 44.84	12.995	25 12 23.1	10.85
11	5 45 24.40	12.983	25 15 59.6	9.27	11 2 29.4	5 45 56.71	12.994	25 16 22.5	9.10
12	5 50 35.95	12.979	25 19 21.1	7.52	12 2 30.6	5 51 8.52	12.990	25 19 39.8	7.34
13	5 55 47.38	12.973	25 22 0.6	5.77	13 2 31.9	5 56 20.21	12.983	25 22 15.0	5.59
14	6 0 58.63	12.964	25 23 58.0	4.01	14 2 33.1	6 1 31.71	12.974	25 24 8.0	3.83
15	6 6 9.62	12.952	25 25 13.2	2.26	15 2 34.4	6 6 42.94	12.962	25 25 18.7	2.07
16	6 11 20.29	12.937	25 25 46.3	+ 0.50	16 2 35.6	6 11 53.84	12.947	25 25 47.3	+ 0.32
17	6 16 30.58	12.920	25 25 37.3	− 1.25	17 2 36.8	6 17 4.35	12.929	25 25 33.8	− 1.44
18	6 21 40.42	12.899	25 24 46.3	2.99	18 2 38.1	6 22 14.39	12.908	25 24 38.2	3.19
19	6 26 49.73	12.876	25 23 13.5	4.73	19 2 39.3	6 27 23.90	12.884	25 23 0.7	4.93
20	6 31 58.45	12.850	25 20 59.1	6.47	20 2 40.5	6 32 32.81	12.857	25 20 41.5	6.67
21	6 37 6.50	12.820	25 18 3.1	8.20	21 2 41.7	6 37 41.04	12.827	25 17 40.8	8.39
22	6 42 13.81	12.788	25 14 25.8	9.92	22 2 42.8	6 42 48.51	12.795	25 13 58.7	10.12
23	6 47 20.32	12.753	25 10 7.4	11.61	23 2 44.0	6 47 55.17	12.759	25 9 35.4	11.82
24	6 52 25.96	12.716	25 5 8.2	13.31	24 2 45.1	6 53 0.95	12.721	25 4 31.3	13.51
25	6 57 30.66	12.675	24 59 28.6	14.99	25 2 46.3	6 58 5.78	12.681	24 58 46.8	15.19
26	7 2 34.36	12.633	24 53 8.9	16.66	26 2 47.4	7 3 9.60	12.637	24 52 22.1	16.86
27	7 7 37.00	12.587	24 46 9.3	18.31	27 2 48.5	7 8 12.34	12.591	24 45 17.6	18.51
28	7 12 38.51	12.538	24 38 30.3	19.94	28 2 49.6	7 13 13.94	12.542	24 37 33.7	20.15
29	7 17 38.82	12.487	24 30 12.3	21.55	29 2 50.6	7 18 14.33	12.491	24 29 10.7	21.76
30	7 22 37.89	12.434	24 21 15.8	23.15	30 2 51.7	7 23 13.46	12.437	24 20 9.2	23.35
31	7 27 35.66	12.379	24 11 41.2	24.73	31 2 52.7	7 28 11.28	12.381	24 10 29.7	24.93
June 1	7 32 32.08	12.322	24 1 28.9	26.29	1 2 53.7	7 33 7.74	12.323	24 0 42.6	26.49
2	7 37 27.10	12.263	23 50 39.6	27.82	2 2 54.7	7 38 2.79	12.264	23 49 18.4	28.02
3	7 42 20.68	12.202	23 39 13.8	29.33	3 2 55.6	7 42 56.39	12.203	23 37 47.7	29.53
4	7 47 12.78	12.139	23 27 12.0	30.82	4 2 56.5	7 47 48.49	12.140	23 25 41.0	31.02
5	7 52 3.35	12.075	23 14 34.8	32.28	5 2 57.4	7 52 39.06	12.075	23 12 59.0	32.48
6	7 56 52.36	12.009	23 1 22.7	33.72	6 2 58.3	7 57 28.05	12.008	22 59 42.2	33.92
7	8 1 39.76	11.941	22 47 36.3	35.14	7 2 59.2	8 2 15.41	11.939	22 45 51.1	35.33
8	8 6 25.52	11.872	22 33 16.3	36.53	8 3 0.0	8 7 1.12	11.870	22 31 26.4	36.72
9	8 11 9.62	11.802	22 18 23.2	37.89	9 3 0.8	8 11 45.16	11.800	22 16 28.8	38.08
10	8 15 52.03	11.731	22 2 57.7	39.23	10 3 1.5	8 16 27.51	11.728	22 0 58.8	39.41
11	8 20 32.72	11.659	21 47 0.5	40.53	11 3 2.3	8 21 8.12	11.656	21 44 57.1	40.72
12	8 25 11.65	11.585	21 30 32.2	41.82	12 3 3.0	8 25 46.96	11.582	21 28 24.4	42.00
13	8 29 48.80	11.511	21 13 33.4	43.07	13 3 3.6	8 30 24.01	11.506	21 11 21.4	43.25
14	8 34 24.15	11.435	20 56 5.0	44.29	14 3 4.3	8 34 59.25	11.430	20 53 48.8	44.47
15	8 38 57.67	11.359	20 38 7.5	45.49	15 3 4.9	8 39 32.66	11.353	20 35 47.1	45.66
16	8 43 29.35	11.281	20 19 41.6	46.66	16 3 5.5	8 44 4.21	11.275	20 17 17.1	46.83
17	8 47 59.17	11.203	20 0 48.0	47.80	17 3 6.0	8 48 33.88	11.197	19 58 19.6	47.96
18	8 52 27.10	11.124	19 41 27.5	48.91	18 3 6.5	8 53 1.66	11.118	19 38 55.2	49.07
19	8 56 53.12	11.044	19 21 40.7	49.98	19 3 7.0	8 57 27.53	11.038	19 19 4.7	50.14
20	9 1 17.21	10.963	19 1 28.5	51.02	20 3 7.5	9 1 51.46	10.957	18 58 48.9	51.18
21	9 5 39.36	10.882	18 40 51.6	52.04	21 3 7.9	9 6 13.44	10.874	18 38 8.4	52.19
22	9 9 59.56	10.800	18 19 50.6	53.03	22 3 8.3	9 10 33.44	10.792	18 17 4.0	53.17
23	9 14 17.78	10.717	17 58 26.4	53.98	23 3 8.6	9 14 51.46	10.709	17 55 36.5	54.12
24	9 18 34.00	10.634	17 36 39.7	54.90	24 3 9.0	9 19 7.47	10.625	17 33 46.6	55.03
25	9 22 48.20	10.550	17 14 31.2	55.79	25 3 9.3	9 23 21.46	10.541	17 11 35.1	55.92
26	9 27 0.38	10.465	16 52 1.8	56.66	26 3 9.5	9 27 33.42	10.456	16 49 2.7	56.77
27	9 31 10.54	10.380	16 29 12.2	57.48	27 3 9.7	9 31 43.34	10.371	16 26 10.3	57.59
28	9 35 18.65	10.295	16 6 3.1	58.27	28 3 9.9	9 35 51.22	10.285	16 2 58.5	58.38
29	9 39 24.71	10.210	15 42 35.4	59.03	29 3 10.1	9 39 57.04	10.200	15 39 28.2	59.14
30	9 43 28.72	10.124	15 18 49.8	59.76	30 3 10.2	9 44 0.80	10.114	15 15 40.2	59.86
31	9 47 30.67	10.038	+14 54 47.0	−60.47	31 3 10.3	9 48 2.49	10.027	+14 51 35.1	−60.56

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	9 47 30.67	10.038	+14 54 47.0	−60.46	1 3 10.3	9 48 2.49	10.027	+14 51 35.1	−60.56
2	9 51 30.55	9.952	14 30 27.7	61.13	2 3 10.3	9 52 2.10	9.941	14 27 13.7	61.22
3	9 55 28.36	9.866	14 5 52.8	61.77	3 3 10.4	9 55 59.64	9.854	14 2 36.7	61.85
4	9 59 24.10	9.779	13 41 2.9	62.38	4 3 10.3	9 59 55.10	9.768	13 37 44.9	62.46
5	10 3 17.76	9.693	13 15 58.8	62.95	5 3 10.3	10 3 48.48	9.681	13 12 39.1	63.03
6	10 7 9.34	9.606	12 50 41.3	63.50	6 3 10.2	10 7 39.77	9.594	12 47 19.9	63.57
7	10 10 58.83	9.519	12 25 11.1	64.01	7 3 10.1	10 11 28.97	9.506	12 21 48.1	64.07
8	10 14 46.24	9.432	11 59 28.8	64.50	8 3 9.9	10 15 16.08	9.419	11 56 4.5	64.55
9	10 18 31.56	9.345	11 33 35.2	64.96	9 3 9.7	10 19 1.09	9.332	11 30 9.7	65.01
10	10 22 14.79	9.258	11 7 31.0	65.39	10 3 9.5	10 22 44.01	9.244	11 4 4.4	65.43
11	10 25 55.92	9.170	10 41 16.9	65.78	11 3 9.2	10 26 24.82	9.156	10 37 49.4	65.82
12	10 29 34.94	9.082	10 14 53.7	66.15	12 3 8.9	10 30 3.52	9.068	10 11 25.3	66.18
13	10 33 11.84	8.993	9 48 22.1	66.48	13 3 8.6	10 33 40.10	8.979	9 44 53.0	66.51
14	10 36 46.61	8.904	9 21 42.8	66.79	14 3 8.2	10 37 14.53	8.890	9 18 13.2	66.81
15	10 40 19.23	8.814	8 54 56.5	67.06	15 3 7.8	10 40 46.80	8.800	8 51 26.5	67.08
16	10 43 49.68	8.723	8 28 3.9	67.31	16 3 7.4	10 44 16.90	8.708	8 24 33.6	67.32
17	10 47 17.93	8.631	8 1 5.7	67.53	17 3 6.9	10 47 44.80	8.616	7 57 35.3	67.53
18	10 50 43.96	8.538	7 34 2.8	67.71	18 3 6.4	10 51 10.47	8.523	7 30 32.4	67.70
19	10 54 7.75	8.444	7 6 56.0	67.85	19 3 5.9	10 54 33.89	8.429	7 3 25.8	67.85
20	10 57 29.27	8.349	6 39 46.1	67.97	20 3 5.3	10 57 55.03	8.333	6 36 16.2	67.96
21	11 0 48.48	8.252	6 12 33.8	68.05	21 3 4.6	11 1 13.85	8.235	6 9 4.3	68.03
22	11 4 5.34	8.153	5 45 19.8	68.10	22 3 4.0	11 4 30.32	8.136	5 41 50.9	68.08
23	11 7 19.81	8.053	5 18 5.0	68.12	23 3 3.3	11 7 44.39	8.035	5 14 36.9	68.09
24	11 10 31.85	7.950	4 50 50.2	68.10	24 3 2.5	11 10 56.01	7.933	4 47 23.1	68.06
25	11 13 41.41	7.846	4 23 36.3	68.05	25 3 1.7	11 14 5.15	7.828	4 20 10.2	68.01
26	11 16 48.45	7.740	3 56 24.0	67.97	26 3 0.9	11 17 11.76	7.721	3 52 59.1	67.91
27	11 19 52.91	7.631	3 29 14.1	67.85	27 3 0.0	11 20 15.78	7.613	3 25 50.6	67.79
28	11 22 54.73	7.520	3 2 7.6	67.69	28 2 59.1	11 23 17.16	7.502	2 58 45.6	67.62
29	11 25 53.87	7.407	2 35 5.2	67.50	29 2 58.1	11 26 15.84	7.388	2 31 44.9	67.43
30	11 28 50.26	7.291	2 8 7.8	67.27	30 2 57.1	11 29 11.76	7.272	2 4 49.3	67.20
31	11 31 43.84	7.173	1 41 16.3	67.01	31 2 56.1	11 32 4.87	7.153	1 37 59.7	66.93
Aug. 1	11 34 34.54	7.052	1 14 31.5	66.71	1 2 55.0	11 34 55.09	7.031	1 11 17.0	66.62
2	11 37 22.30	6.928	0 47 54.3	66.38	2 2 53.8	11 37 42.35	6.906	0 44 42.0	66.28
3	11 40 7.04	6.800	+ 0 21 25.5	66.01	3 2 52.6	11 40 26.58	6.779	+ 0 18 15.6	65.91
4	11 42 48.69	6.670	− 0 4 53.9	65.60	4 2 51.4	11 43 7.72	6.648	− 0 8 1.2	65.49
5	11 45 27.17	6.536	0 31 2.9	65.15	5 2 50.1	11 45 45.67	6.513	0 34 7.5	65.03
6	11 48 2.38	6.398	0 57 0.7	64.66	6 2 48.7	11 48 20.34	6.375	1 0 2.5	64.54
7	11 50 34.23	6.256	1 22 46.5	64.14	7 2 47.3	11 50 51.65	6.233	1 25 45.3	64.01
8	11 53 2.63	6.110	1 48 19.3	63.58	8 2 45.8	11 53 19.50	6.087	1 51 14.9	63.44
9	11 55 27.47	5.959	2 13 38.0	62.97	9 2 44.3	11 55 43.77	5.935	2 16 30.3	62.83
10	11 57 48.64	5.804	2 38 41.5	62.32	10 2 42.7	11 58 4.35	5.779	2 41 30.4	62.17
11	12 0 6.02	5.643	3 3 28.8	61.62	11 2 41.0	12 0 21.14	5.619	3 6 14.1	61.46
12	12 2 19.48	5.477	3 27 58.8	60.87	12 2 39.3	12 2 34.00	5.452	3 30 40.3	60.71
13	12 4 28.88	5.305	3 52 10.4	60.08	13 2 37.5	12 4 42.79	5.279	3 54 47.9	59.91
14	12 6 34.08	5.127	4 16 2.3	59.23	14 2 35.6	12 6 47.36	5.101	4 18 35.8	59.06
15	12 8 34.93	4.943	4 39 33.3	58.34	15 2 33.7	12 8 47.57	4.916	4 42 2.6	58.16
16	12 10 31.27	4.751	5 2 42.1	57.38	16 2 31.7	12 10 43.26	4.724	5 5 7.0	57.20
17	12 12 22.93	4.552	5 25 27.1	56.36	17 2 29.6	12 12 34.25	4.524	5 27 47.5	56.17
18	12 14 9.72	4.346	5 47 46.9	55.27	18 2 27.5	12 14 20.37	4.318	5 50 2.6	55.08
19	12 15 51.46	4.131	6 9 39.9	54.12	19 2 25.2	12 16 1.43	4.102	6 11 50.7	53.92
20	12 17 27.94	3.908	6 31 4.3	52.90	20 2 22.9	12 17 37.22	3.879	6 33 10.1	52.69
21	12 18 58.97	3.676	6 51 58.5	51.60	21 2 20.4	12 19 7.54	3.647	6 53 59.2	51.39
22	12 20 24.33	3.436	7 12 20.8	50.24	22 2 17.9	12 20 32.20	3.407	7 14 16.2	50.02
23	12 21 43.84	3.188	7 32 9.4	48.79	23 2 15.3	12 21 51.00	3.158	7 33 59.3	48.56
24	12 22 57.29	2.931	7 51 22.3	47.26	24 2 12.6	12 23 3.73	2.901	7 53 6.5	47.02
25	12 24 4.46	2.665	8 9 57.4	45.64	25 2 9.7	12 24 10.20	2.636	8 11 35.8	45.40
26	12 25 5.15	2.390	8 27 52.5	43.93	26 2 6.8	12 25 10.18	2.361	8 29 25.1	43.69
27	12 25 59.14	2.107	8 45 5.4	42.13	27 2 3.8	12 26 3.46	2.078	8 46 32.1	41.88
28	12 26 46.21	1.814	9 1 33.9	40.23	28 2 0.6	12 26 49.83	1.786	9 2 54.5	39.97
29	12 27 26.16	1.513	9 17 15.5	38.22	29 1 57.3	12 27 29.10	1.485	9 18 30.0	37.97
30	12 27 58.80	1.205	9 32 7.8	36.11	30 1 53.9	12 28 1.07	1.177	9 33 16.1	35.86
31	12 28 23.94	+0.889	− 9 46 8.2	−33.90	31 1 50.4	12 28 25.56	+0.862	− 9 47 10.3	−33.65

VENUS, 1871.

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	iff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	12 28 41.42	+0.566	− 9 59 14.2	−31.58	1 1 46.7	12 28 42.40	+0.541	−10 0 10.2	−31.33
2	12 28 51.07	+0.237	10 11 23.3	29.15	2 1 43.0	12 28 51.46	+0.213	10 12 13.2	28.90
3	12 28 52.77	−0.097	10 22 32.8	26.61	3 1 39.1	12 28 52.59	−0.120	10 23 16.6	26.36
4	12 28 46.39	0.435	10 32 39.9	23.96	4 1 35.0	12 28 45.68	0.457	10 33 17.7	23.71
5	12 28 31.84	0.777	10 41 41.9	21.19	5 1 30.8	12 28 30.64	0.797	10 42 13.9	20.95
6	12 28 9.05	1.122	10 49 36.2	18.31	6 1 26.5	12 28 7.41	1.139	10 50 2.5	18.08
7	12 27 37.98	1.467	10 56 20.1	15.32	7 1 22.0	12 27 35.96	1.481	10 56 40.9	15.10
8	12 26 58.65	1.811	11 1 51.1	12.23	8 1 17.5	12 26 56.30	1.823	11 2 6.7	12.02
9	12 26 11.09	2.152	11 6 6.5	9.03	9 1 12.7	12 26 8.48	2.162	11 6 17.3	8.84
10	12 25 15.39	2.489	11 9 3.9	5.73	10 1 7.9	12 25 12.57	2.496	11 9 10.3	5.56
11	12 24 11.67	2.820	11 10 41.0	− 2.34	11 1 2.9	12 24 8.70	2.824	11 10 43.4	− 2.19
12	12 23 0.11	3.142	11 10 55.9	+ 1.12	12 0 57.7	12 22 57.07	3.143	11 10 54.7	+ 1.26
13	12 21 40.94	3.453	11 9 46.8	4.65	13 0 52.5	12 21 37.91	3.452	11 9 42.6	4.77
14	12 20 14.45	3.751	11 7 12.2	8.23	14 0 47.1	12 20 11.50	3.747	11 7 5.7	8.32
15	12 18 40.99	4.033	11 3 11.4	11.84	15 0 41.6	12 18 38.20	4.026	11 3 3.1	11.90
16	12 17 1.00	4.296	10 57 43.8	15.46	16 0 36.1	12 16 58.42	4.286	10 57 34.4	15.49
17	12 15 14.95	4.537	10 50 49.2	19.08	17 0 30.4	12 15 12.65	4.524	10 50 39.5	19.08
18	12 13 23.38	4.754	10 42 28.1	22.67	18 0 24.6	12 13 21.43	4.739	10 42 18.9	22.64
19	12 11 26.91	4.945	10 32 41.7	26.19	19 0 18.7	12 11 25.37	4.928	10 32 33.6	26.13
20	12 9 26.22	5.107	10 21 31.9	29.61	20 0 12.8	12 9 25.13	5.087	10 21 25.6	29.53
21	12 7 22.02	5.237	10 9 1.2	32.92	21 0 6.8	12 7 21.43	5.216	10 8 57.4	32.80
22	12 5 15.09	5.334	9 55 12.8	36.08	22 0 0.8	12 5 15.02	5.312	9 55 12.3	35.93
					22 23 54.7	12 3 6.71	5.374	9 40 14.2	38.88
23	12 3 6.24	5.397	9 40 10.8	39.05	23 23 48.6	12 0 57.33	5.401	9 24 7.8	41.62
24	12 0 56.32	5.424	9 23 59.9	41.81	24 23 42.5	11 58 47.75	5.391	9 6 58.4	44.13
25	11 58 46.19	5.414	9 6 45.5	44.34	25 23 36.5	11 56 38.85	5.344	8 48 51.8	46.38
26	11 56 36.76	5.366	8 48 33.5	46.61	26 23 30.4	11 54 31.51	5.261	8 29 54.5	48.34
27	11 54 28.91	5.282	8 29 30.6	48.57	27 23 24.4	11 52 26.58	5.143	8 10 13.5	50.01
28	11 52 23.52	5.161	8 9 43.8	50.26	28 23 18.5	11 50 24.89	4.991	7 49 56.3	51.37
29	11 50 21.43	5.007	7 49 20.6	51.62	29 23 12.6	11 48 27.25	4.806	7 29 10.3	52.41
30	11 48 23.45	4.819	7 28 28.6	52.65	30 23 6.8	11 46 34.43	4.591	7 8 3.1	53.13
Oct. 1	11 46 30.35	4.601	7 7 15.7	53.36	1 23 1.1	11 44 47.12	4.347	6 46 42.5	53.53
2	11 44 42.84	4.354	6 45 49.6	53.75	2 22 55.4	11 43 5.97	4.078	6 25 16.0	53.62
3	11 43 1.58	4.081	6 24 18.0	53.82	3 22 49.9	11 41 31.58	3.785	6 3 51.0	53.41
4	11 41 27.15	3.784	6 2 48.4	53.59	4 22 44.6	11 40 4.46	3.472	5 42 34.6	52.91
5	11 40 0.09	3.468	5 41 27.9	53.06	5 22 39.3	11 38 45.05	3.142	5 21 33.7	52.13
6	11 38 40.82	3.135	5 20 23.4	52.26	6 22 34.2	11 37 33.74	2.798	5 0 54.6	51.09
7	11 37 29.74	2.787	4 59 41.3	51.20	7 22 29.2	11 36 30.84	2.442	4 40 43.2	49.82
8	11 36 27.15	2.427	4 39 27.5	49.90	8 22 24.4	11 35 36.59	2.078	4 21 4.8	48.34
9	11 35 33.29	2.060	4 19 47.5	48.39	9 22 19.7	11 34 51.17	1.707	4 2 4.3	46.67
10	11 34 48.33	1.686	4 0 46.1	46.69	10 22 15.2	11 34 14.71	1.331	3 43 46.0	44.83
11	11 34 12.40	1.308	3 42 27.5	44.83	11 22 10.8	11 33 47.29	0.954	3 26 13.5	42.85
12	11 33 45.57	0.928	3 24 55.4	42.82	12 22 6.5	11 33 28.92	0.577	3 9 30.2	40.74
13	11 33 27.84	0.549	3 8 13.1	40.68	13 22 2.4	11 33 19.57	−0.202	2 53 38.9	38.52
14	11 33 19.20	−0.172	2 52 23.5	38.44	14 21 58.5	11 33 19.19	+0.170	2 38 42.1	36.21
15	11 33 19.57	+0.202	2 37 28.8	36.11	15 21 54.7	11 33 27.69	0.538	2 24 41.5	33.83
16	11 33 28.85	0.570	2 23 30.9	33.71	16 21 51.1	11 33 44.94	0.900	2 11 38.7	31.40
17	11 33 46.91	0.933	2 10 31.3	31.25	17 21 47.6	11 34 10.80	1.255	1 59 34.8	28.92
18	11 34 13.61	1.290	1 58 31.0	28.76	18 21 44.2	11 34 45.10	1.603	1 48 30.6	26.42
19	11 34 48.77	1.639	1 47 30.9	26.24	19 21 41.0	11 35 27.65	1.943	1 38 26.6	23.90
20	11 35 32.20	1.979	1 37 31.4	23.71	20 21 37.9	11 36 18.28	2.275	1 29 23.2	21.38
21	11 36 23.71	2.312	1 28 32.8	21.17	21 21 34.9	11 37 16.77	2.598	1 21 20.5	18.85
22	11 37 23.09	2.635	1 20 35.2	18.63	22 21 32.1	11 38 22.90	2.912	1 14 18.5	16.33
23	11 38 30.13	2.950	1 13 38.5	16.10	23 21 29.4	11 39 36.47	3.217	1 8 16.9	13.82
24	11 39 44.61	3.255	1 7 42.5	13.59	24 21 26.8	11 40 57.26	3.513	1 3 15.1	11.34
25	11 41 6.29	3.550	1 2 46.5	11.10	25 21 24.3	11 42 25.04	3.799	0 59 12.5	8.89
26	11 42 34.95	3.836	0 58 49.7	8.64	26 21 22.0	11 43 59.57	4.076	0 56 8.2	6.47
27	11 44 10.36	4.113	0 55 51.4	6.22	27 21 19.7	11 45 40.63	4.344	0 54 1.5	4.09
28	11 45 52.30	4.380	0 53 50.8	3.84	28 21 17.6	11 47 28.01	4.602	0 52 51.4	+ 1.76
29	11 47 40.53	4.637	0 52 46.9	+ 1.50	29 21 15.5	11 49 21.47	4.851	0 52 36.8	− 0.53
30	11 49 34.82	4.885	0 52 38.6	− 0.79	30 21 13.6	11 51 20.78	5.091	0 53 16.5	2.77
31	11 51 34.95	+5.124	− 0 53 24.6	− 3.03	31 21 11.7	11 53 25.73	+5.321	− 0 54 49.4	− 4.96

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	11 53 40.70	+5.354	- 0 55 3.8	- 5.22	1 21 10.0	11 55 36.10	+5.542	- 0 57 14.4	- 7.11
2	11 55 51.86	5.575	0 57 35.0	7.36	2 21 8.3	11 57 51.69	5.755	1 0 30.2	9.19
3	11 58 8.22	5.787	1 0 56.9	9.45	3 21 6.7	12 0 12.29	5.960	1 4 35.3	11.22
4	12 0 29.56	5.990	1 5 8.1	11.48	4 21 5.2	12 2 37.71	6.156	1 9 28.4	13.20
5	12 2 55.69	6.185	1 10 7.3	13.44	5 21 3.7	12 5 7.73	6.344	1 15 8.1	15.11
6	12 5 26.41	6.373	1 15 52.9	15.35	6 21 2.4	12 7 42.17	6.524	1 21 33.0	16.96
7	12 8 1.53	6.552	1 22 23.6	17.20	7 21 1.1	12 10 20.84	6.697	1 28 41.6	18.75
8	12 10 40.86	6.724	1 29 37.9	18.99	8 20 59.8	12 13 3.57	6.863	1 36 32.5	20.48
9	12 13 24.22	6.889	1 37 34.4	20.71	9 20 58.7	12 15 50.20	7.022	1 45 4.3	22.16
10	12 16 11.46	7.047	1 46 11.7	22.38	10 20 57.6	12 18 40.56	7.174	1 54 15.7	23.78
11	12 19 2.41	7.198	1 55 28.4	24.00	11 20 56.5	12 21 34.50	7.320	2 4 5.2	25.34
12	12 21 56.92	7.343	2 5 23.0	25.55	12 20 55.5	12 24 31.88	7.461	2 14 31.4	26.84
13	12 24 54.86	7.483	2 15 54.2	27.04	13 20 54.6	12 27 32.58	7.596	2 25 32.8	28.28
14	12 27 56.09	7.618	2 27 0.5	28.48	14 20 53.7	12 30 36.46	7.726	2 37 8.2	29.67
15	12 31 0.49	7.747	2 38 40.6	29.86	15 20 52.9	12 33 43.40	7.852	2 49 16.3	31.00
16	12 34 7.93	7.872	2 50 53.3	31.19	16 20 52.1	12 36 53.31	7.973	3 1 55.8	32.28
17	12 37 18.31	7.992	3 3 37.2	32.46	17 20 51.4	12 40 6.07	8.090	3 15 5.4	33.51
18	12 40 31.53	8.109	3 16 51.0	33.68	18 20 50.7	12 43 21.59	8.203	3 28 43.9	34.69
19	12 43 47.50	8.221	3 30 33.5	34.86	19 20 50.1	12 46 39.78	8.312	3 42 50.1	35.82
20	12 47 6.12	8.330	3 44 43.6	35.98	20 20 49.5	12 50 0.55	8.418	3 57 22.7	36.90
21	12 50 27.31	8.435	3 59 20.0	37.05	21 20 49.0	12 53 23.83	8.521	4 12 20.6	37.93
22	12 53 50.99	8.538	4 14 21.6	38.07	22 20 48.4	12 56 49.55	8.622	4 27 42.7	38.91
23	12 57 17.11	8.638	4 29 47.1	39.04	23 20 48.0	13 0 17.66	8.720	4 43 27.7	39.84
24	13 0 45.60	8.736	4 45 35.4	39.97	24 20 47.5	13 3 48.09	8.815	4 59 34.5	40.72
25	13 4 16.40	8.830	5 1 45.4	40.85	25 20 47.1	13 7 20.77	8.908	5 16 2.1	41.56
26	13 7 49.43	8.922	5 18 15.9	41.68	26 20 46.8	13 10 55.65	8.998	5 32 49.2	42.36
27	13 11 24.66	9.012	5 35 5.8	42.47	27 20 46.5	13 14 32.68	9.087	5 49 54.8	43.11
28	13 15 2.01	9.101	5 52 14.1	43.21	28 20 46.2	13 18 11.81	9.174	6 7 17.8	43.80
29	13 18 41.47	9.187	6 9 39.5	43.90	29 20 45.9	13 21 53.00	9.259	6 24 56.9	44.45
30	13 22 22.98	9.271	6 27 20.9	44.54	30 20 45.7	13 25 36.22	9.342	6 42 51.1	45.06
Dec. 1	13 26 6.49	9.354	6 45 17.2	45.14	1 20 45.5	13 29 21.41	9.423	7 0 59.3	45.62
2	13 29 51.97	9.435	7 3 27.2	45.69	2 20 45.3	13 33 8.53	9.503	7 19 20.3	46.13
3	13 33 39.37	9.515	7 21 50.0	46.20	3 20 45.2	13 36 57.54	9.582	7 37 53.1	46.60
4	13 37 28.66	9.593	7 40 24.4	46.66	4 20 45.1	13 40 48.42	9.658	7 56 36.5	47.02
5	13 41 19.81	9.669	7 59 9.3	47.07	5 20 45.0	13 44 41.13	9.734	8 15 29.5	47.39
6	13 45 12.77	9.744	8 18 3.5	47.44	6 20 45.0	13 48 35.62	9.808	8 34 30.9	47.72
7	13 49 7.51	9.818	8 37 6.0	47.76	7 20 45.0	13 52 31.88	9.881	8 53 39.6	48.00
8	13 53 4.00	9.890	8 56 15.6	48.03	8 20 45.0	13 56 29.87	9.952	9 12 54.4	48.23
9	13 57 2.22	9.961	9 15 31.2	48.26	9 20 45.1	14 0 29.57	10.023	9 32 14.3	48.43
10	14 1 2.14	10.032	9 34 51.8	48.45	10 20 45.2	14 4 30.96	10.093	9 51 38.4	48.58
11	14 5 3.75	10.102	9 54 16.3	48.59	11 20 45.3	14 8 34.02	10.162	10 11 5.7	48.69
12	14 9 7.02	10.171	10 13 43.7	48.69	12 20 45.4	14 12 38.75	10.231	10 30 35.0	48.75
13	14 13 11.94	10.239	10 33 13.0	48.74	13 20 45.6	14 16 45.11	10.299	10 50 5.2	48.76
14	14 17 18.49	10.306	10 52 43.1	48.75	14 20 45.8	14 20 53.08	10.366	11 9 35.3	48.74
15	14 21 26.65	10.373	11 12 13.0	48.73	15 20 46.0	14 25 2.65	10.422	11 29 4.3	48.67
16	14 25 36.40	10.440	11 31 41.7	48.65	16 20 46.2	14 29 13.83	10.499	11 48 31.3	48.57
17	14 29 47.75	10.506	11 51 8.1	48.54	17 20 46.5	14 33 26.60	10.565	12 7 55.3	48.42
18	14 34 0.69	10.572	12 10 31.4	48.39	18 20 46.8	14 37 40.96	10.631	12 27 15.3	48.23
19	14 38 15.21	10.638	12 29 50.5	48.20	19 20 47.1	14 41 56.91	10.697	12 46 30.3	48.01
20	14 42 31.30	10.703	12 49 4.5	47.97	20 20 47.5	14 46 14.43	10.763	13 5 39.5	47.74
21	14 46 48.97	10.769	13 8 12.5	47.70	21 20 47.8	14 50 33.52	10.828	13 24 41.8	47.44
22	14 51 8.21	10.834	13 27 13.6	47.39	22 20 48.2	14 54 54.18	10.894	13 43 36.4	47.10
23	14 55 29.01	10.899	13 46 6.8	47.04	23 20 48.7	14 59 16.43	10.959	14 2 22.4	46.72
24	14 59 51.37	10.964	14 4 51.2	46.65	24 20 49.1	15 3 40.22	11.024	14 20 58.8	46.30
25	15 4 15.29	11.029	14 23 25.9	46.23	25 20 49.6	15 8 5.58	11.089	14 39 24.6	45.85
26	15 8 40.77	11.094	14 41 50.0	45.77	26 20 50.1	15 12 32.50	11.154	14 57 39.1	45.35
27	15 13 7.80	11.159	15 0 2.5	45.27	27 20 50.6	15 17 0.98	11.219	15 15 41.3	44.82
28	15 17 36.38	11.223	15 18 2.5	44.73	28 20 51.2	15 21 31.01	11.283	15 33 30.2	44.25
29	15 22 6.51	11.287	15 35 49.2	44.15	29 20 51.8	15 26 2.59	11.347	15 51 4.9	43.64
30	15 26 38.18	11.351	15 53 21.6	43.54	30 20 52.4	15 30 35.70	11.411	16 8 24.6	42.99
31	15 31 11.38	11.415	16 10 38.8	42.89	31 20 53.0	15 35 10.33	11.474	16 25 28.3	42.31
32	15 35 46.09	11.478	-16 27 40.0	-42.20	32 20 53.7	15 39 46.47	11.537	-16 42 15.2	-41.59

MARS, 1871.

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 0	12 5 23.67	+3.303	+ 2 13 17.0	−18.37	0 17 23.8	12 6 20.79	+3.258	+ 2 7 59.7	−18.07
1	12 6 42.30	3.250	2 6 0.5	18.00	1 17 21.2	12 7 38.36	3.205	2 0 50.5	17.69
2	12 7 59.65	3.195	1 58 53.0	17.62	2 17 18.5	12 8 54.61	3.150	1 53 50.4	17.31
3	12 9 15.67	3.140	1 51 54.7	17.24	3 17 15.8	12 10 9.53	3.094	1 46 59.6	16.92
4	12 10 30.36	3.084	1 45 5.7	16.85	4 17 13.1	12 11 23.09	3.036	1 40 18.2	16.53
5	12 11 43.67	3.025	1 38 26.3	16.44	5 17 10.4	12 12 35.26	2.978	1 33 46.4	16.12
6	12 12 55.57	2.966	1 31 56.5	16.03	6 17 7.6	12 13 46.01	2.918	1 27 24.4	15.71
7	12 14 6.05	2.906	1 25 36.6	15.62	7 17 4.8	12 14 55.32	2.857	1 21 12.4	15.29
8	12 15 15.06	2.845	1 19 26.9	15.19	8 17 2.0	12 16 3.13	2.794	1 15 10.7	14.86
9	12 16 22.57	2.781	1 13 27.4	14.76	9 16 59.2	12 17 9.43	2.730	1 9 19.4	14.42
10	12 17 28.55	2.717	1 7 38.5	14.32	10 16 56.3	12 18 14.18	2.665	1 3 38.8	13.97
11	12 18 32.96	2.651	1 2 0.4	13.86	11 16 53.5	12 19 17.33	2.598	0 58 9.1	13.51
12	12 19 35.76	2.582	0 56 33.3	13.40	12 16 50.6	12 20 18.85	2.529	0 52 50.5	13.04
13	12 20 36.91	2.513	0 51 17.4	12.93	13 16 47.6	12 21 18.70	2.458	0 47 43.2	12.56
14	12 21 36.38	2.442	0 46 13.0	12.44	14 16 44.6	12 22 16.84	2.386	0 42 47.6	12.07
15	12 22 34.11	2.369	0 41 20.4	11.94	15 16 41.6	12 23 13.23	2.312	0 38 3.8	11.58
16	12 23 30.08	2.295	0 36 39.6	11.44	16 16 38.6	12 24 7.83	2.237	0 33 32.1	11.07
17	12 24 24.23	2.218	0 32 11.1	10.93	17 16 35.6	12 25 0.60	2.160	0 29 12.6	10.55
18	12 25 16.54	2.140	0 27 54.9	10.41	18 16 32.5	12 25 51.49	2.081	0 25 5.7	10.02
19	12 26 6.95	2.061	0 23 51.4	9.87	19 16 29.4	12 26 40.46	2.000	0 21 11.6	9.49
20	12 26 55.42	1.979	0 20 0.8	9.33	20 16 26.2	12 27 27.48	1.918	0 17 30.4	8.94
21	12 27 41.92	1.896	0 16 23.3	8.79	21 16 23.0	12 28 12.51	1.834	0 14 2.5	8.39
22	12 28 26.41	1.811	0 12 59.1	8 23	22 16 19.8	12 28 55.50	1.748	0 10 47.9	7.82
23	12 29 8.84	1.724	0 9 48.5	7.66	23 16 16.6	12 29 36.43	1.661	0 7 47.0	7.25
24	12 29 49.18	1.636	0 6 51.5	7.09	24 16 13.3	12 30 15.24	1.573	0 4 59.8	6.67
25	12 30 27.39	1.547	0 4 8.5	6.50	25 16 10.0	12 30 51.90	1.482	0 2 26.6	6.09
26	12 31 3.43	1.455	+ 0 1 39.6	5.91	26 16 6.6	12 31 26.38	1.391	+ 0 0 7.6	5.49
27	12 31 37.26	1.363	− 0 0 35.1	5.31	27 16 3.2	12 31 58.64	1.297	− 0 1 57.1	4.89
28	12 32 8.85	1.269	0 2 35.3	4.70	28 15 59.8	12 32 28.64	1.202	0 3 47.2	4.29
29	12 32 38.16	1.174	0 4 20.8	4.09	29 15 56.3	12 32 56.34	1.106	0 5 22.7	3.67
30	12 33 5.14	1.076	0 5 51.6	3.47	30 15 52.8	12 33 21.70	1.008	0 6 43.4	3.05
31	12 33 29.77	0.977	0 7 7.4	2.85	31 15 49.2	12 33 44.69	0.908	0 7 49.1	2.42
Feb. 1	12 33 52.00	0.875	0 8 8.1	2.21	1 15 45.6	12 34 5.27	0.807	0 8 39.7	1.79
2	12 34 11.79	0.773	0 8 53.6	1.57	2 15 42.0	12 34 23.40	0.704	0 9 15.0	1.15
3	12 34 29.11	0.669	0 9 23.6	0.92	3 15 38.3	12 34 39.04	0.599	0 9 34.8	− 0.50
4	12 34 43.91	0.563	0 9 38.0	− 0.27	4 15 34.6	12 34 52.15	0.493	0 9 38.9	+ 0.16
5	12 34 56.15	0.456	0 9 36.6	+ 0.39	5 15 30.9	12 35 2.68	0.385	0 9 27.3	0.82
6	12 35 5.79	0.346	0 9 19.4	1.05	6 15 27.1	12 35 10.60	0.275	0 8 59.7	1.48
7	12 35 12.78	0.235	0 8 46.0	1.72	7 15 23.2	12 35 15.86	0.163	0 8 16.0	2.16
8	12 35 17.10	0.123	0 7 56.3	2.41	8 15 19.3	12 35 18.43	+0.050	0 7 16.0	2.84
9	12 35 18.68	+0.009	0 6 50.2	3.10	9 15 15.4	12 35 18.26	−0.065	0 5 59.6	3.53
10	12 35 17.51	−0.107	0 5 27.6	3.79	10 15 11.4	12 35 15.32	0.181	0 4 26.7	4.22
11	12 35 13.53	0.224	0 3 48.3	4.49	11 15 7.4	12 35 9.57	0.298	0 2 37.1	4.91
12	12 35 6.71	0.344	− 0 1 52.2	5.19	12 15 3.3	12 35 0.98	0.417	− 0 0 30.8	5.61
13	12 34 57.04	0.464	+ 0 0 20.7	5.89	13 14 59.2	12 34 49.53	0 537	+ 0 1 52.2	6.31
14	12 34 44.47	0.584	0 2 50.4	6.59	14 14 55.0	12 34 35.19	0.658	0 4 32.0	7.01
15	12 34 28.99	0.706	0 5 37.1	7.30	15 14 50.8	12 34 17.95	0.779	0 7 28.6	7.71
16	12 34 10.58	0.828	0 8 40.6	8.00	16 14 46.5	12 33 57.78	0.901	0 10 42.0	8.41
17	12 33 49.23	0.951	0 12 1.0	8.70	17 14 42.2	12 33 34.69	1.023	0 14 12.0	9.10
18	12 33 24.92	1.074	0 15 38.0	9.39	18 14 37.9	12 33 8.66	1.146	0 17 58.6	9.78
19	12 32 57.66	1.197	0 19 31.7	10.08	19 14 33.5	12 32 39.69	1.268	0 22 1.6	10.46
20	12 32 27.45	1.320	0 23 41.9	10.77	20 14 29.0	12 32 7.80	1.390	0 26 20.8	11.13
21	12 31 54.30	1.442	0 28 8.3	11.44	21 14 24.5	12 31 32.99	1.511	0 30 56.0	11.80
22	12 31 18.21	1.564	0 32 50.8	12.10	22 14 19.9	12 30 55.28	1.631	0 35 47.0	12.45
23	12 30 39.22	1.685	0 37 49.0	12.75	23 14 15.3	12 30 14.70	1.750	0 40 53.4	13.08
24	12 29 57.35	1.804	0 43 2.5	13.38	24 14 10.7	12 29 31.28	1.868	0 46 14.9	13.70
25	12 29 12.63	1.922	0 48 31.1	14.00	25 14 6.0	12 28 45.05	1.984	0 51 51.1	14.31
26	12 28 25.10	2.038	0 54 14.4	14.60	26 14 1.2	12 27 56.05	2.098	0 57 41.5	14.89
27	12 27 34.80	2.153	1 0 11.8	15.18	27 13 56.4	12 27 4.33	2.211	1 3 45.7	15.46
28	12 26 41.79	2.265	1 6 22.9	15.74	28 13 51.6	12 26 9.95	2.321	1 10 3.3	16.00
29	12 25 46.10	2.375	1 12 47.3	16.28	29 13 46.7	12 25 12.95	2.428	1 16 33.7	16.52
30	12 24 47.81	2.482	1 19 24.3	16.80	30 13 41.8	12 24 13.40	2.533	1 23 16.3	17.02
31	12 23 46.98	−2.586	+ 1 26 13.3	+17.29	31 13 36.8	12 23 11.37	−2.635	+ 1 30 10.5	+17.49

MARS, 1871.

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	12 25 46.10	-2.375	+ 1 12 47.3	+16.28	1 13 46.7	12 25 12.95	-2.428	+ 1 16 33.7	+16.52
2	12 24 47.81	2.482	1 19 24.3	16.80	2 13 41.8	12 24 13.40	2.533	1 23 16.3	17.02
3	12 23 46.98	2.586	1 26 13.3	17.29	3 13 36.8	12 23 11.37	2.635	1 30 10.5	17.49
4	12 22 43.67	2.688	1 33 13.9	17.76	4 13 31.8	12 22 6.92	2.734	1 37 15.9	17.94
5	12 21 37.97	2.787	1 40 25.4	18.19	5 13 26.8	12 21 0.14	2.830	1 44 31.6	18.36
6	12 20 29.96	2.881	1 47 47.0	18.61	6 13 21.7	12 19 51.11	2.922	1 51 57.0	18.75
7	12 19 19.71	2.972	1 55 18.1	18.99	7 13 16.6	12 18 39.93	3.100	1 59 31.5	19.11
8	12 18 7.34	3.058	2 2 57.9	19.33	8 13 11.4	12 17 26.69	3.093	2 7 14.1	19.44
9	12 16 52.93	3.140	2 10 45.7	19 64	9 13 6.3	12 16 11.49	3.172	2 15 4.2	19.73
10	12 15 36.60	3.218	2 18 40.6	19.93	10 13 1.1	12 14 54.44	3.247	2 23 0.8	19.99
11	12 14 18.47	3.291	2 26 41.7	20.17	11 12 55.8	12 13 35.67	3.316	2 31 3.2	20.21
12	12 12 58.65	3.359	2 34 48.2	20.37	12 12 50.5	12 12 15.30	3.380	2 39 10.4	20.39
13	12 11 37.28	3.421	2 42 59.1	20.53	13 12 45.2	12 10 53.46	3.438	2 47 21.5	20.53
14	12 10 14.50	3.477	2 51 13.5	20.65	14 12 39.9	12 9 30.29	3.491	2 55 35.5	20.63
15	12 8 50.44	3.526	2 59 30.4	20.73	15 12 34.6	12 8 5.93	3.537	3 3 51.4	20.69
16	12 7 25.26	3.570	3 7 48.7	20.78	16 12 29.2	12 6 40.55	3.577	3 12 8.2	20.71
17	12 5 59.12	3.607	3 16 7.5	20.78	17 12 23.9	12 5 14.30	3.610	3 20 24.9	20.68
18	12 4 32.18	3.637	3 24 25.5	20.73	18 12 18.5	12 3 47.34	3.636	3 28 40.4	20.60
19	12 3 4.60	3.660	3 32 41.9	20.63	19 12 13.1	12 2 19.83	3.655	3 36 53.6	20.48
20	12 1 36.56	3.676	3 40 55.4	20.49	20 12 7.7	12 0 51.95	3.667	3 45 3.4	20.32
21	12 0 8.23	3.684	3 49 5.0	20.30	21 12 2.3	11 59 23.87	3.672	3 53 8.7	20.11
22	11 58 39.79	3.685	3 57 9.5	20.07	22 11 56.9	11 57 55.77	3.669	4 1 8.5	19.86
23	11 57 11.41	3.679	4 5 7.9	19.80	23 11 51.5	11 56 27.81	3.659	4 9 1.8	19.57
24	11 55 43.27	3.666	4 12 59.2	19.48	24 11 46.2	11 55 0.18	3.642	4 16 47.4	19.23
25	11 54 15.53	3.645	4 20 42.4	19.12	25 11 40.8	11 53 33.04	3.618	4 24 24.5	18.85
26	11 52 48.38	3.618	4 28 16.4	18.71	26 11 35.4	11 52 6.54	3.588	4 31 52.1	18.43
27	11 51 21.96	3.583	4 35 40.3	18.27	27 11 30.0	11 50 40.86	3.551	4 39 9.2	17.98
28	11 49 56.45	3.542	4 42 53.3	17.80	28 11 24.7	11 49 16.15	3.507	4 46 15.1	17.50
29	11 48 31.99	3.494	4 49 54.5	17.29	29 11 19.4	11 47 52.56	3.458	4 53 8.9	16.98
30	11 47 8.74	3.441	4 56 43.0	16.75	30 11 14.1	11 46 30.23	3.402	4 59 49.8	16.43
31	11 45 46.84	3.382	5 3 18.3	16.18	31 11 8.8	11 45 9.30	3.341	5 6 17.1	15.85
Apr. 1	11 44 26.42	3.318	5 9 39.5	15.58	1 11 3.6	11 43 49.91	3.274	5 12 30.2	15.24
2	11 43 7.63	3.248	5 15 46.0	14.96	2 10 58.3	11 42 32.18	3.202	5 18 28.5	14.61
3	11 41 50.57	3.173	5 21 37.4	14.31	3 10 53.1	11 41 16.23	3.126	5 24 11.5	13.96
4	11 40 35.37	3.093	5 27 13.0	13.65	4 10 48.0	11 40 2.17	3.045	5 29 38.7	13.30
5	11 39 22.14	3.009	5 32 32.3	12.96	5 10 42.9	11 38 50.11	2.959	5 34 49.6	12.61
6	11 38 10.98	2.921	5 37 35.0	12.26	6 10 37.8	11 37 40.16	2.869	5 39 43.7	11.90
7	11 37 2.00	2.828	5 42 20.7	11.55	7 10 32.7	11 36 32.40	2.776	5 44 20.8	11.18
8	11 35 55.28	2.731	5 46 49.0	10.81	8 10 27.7	11 35 26.93	2.679	5 48 40.4	10.45
9	11 34 50.92	2.632	5 50 59.6	10.07	9 10 22.7	11 34 23.84	2.579	5 52 42.4	9.71
10	11 33 48.99	2.529	5 54 52.3	9.31	10 10 17.8	11 33 23.19	2.475	5 56 26.4	8.96
11	11 32 49.57	2.422	5 58 26.6	8.55	11 10 12.9	11 32 25.07	2.368	5 59 52.3	8.20
12	11 31 52.74	2.313	6 1 42.6	7.78	12 10 8.0	11 31 29.53	2.259	6 2 59.8	7.43
13	11 30 58.55	2.202	6 4 40.0	7.00	13 10 3.2	11 30 36.65	2.147	6 5 48.8	6.65
14	11 30 7.07	2.088	6 7 18.7	6.22	14 9 58.4	11 29 46.48	2.033	6 8 19.2	5.87
15	11 29 18.35	1.972	6 9 38.6	5.43	15 9 53.7	11 28 59.07	1.917	6 10 30.8	5.09
16	11 28 32.43	1.854	6 11 39.6	4.65	16 9 49.0	11 28 14.47	1.799	6 12 23.7	4.31
17	11 27 49.37	1.734	6 13 21.7	3.86	17 9 44.4	11 27 32.72	1.680	6 13 57.7	3.53
18	11 27 9.20	1.613	6 14 44.8	3.07	18 9 39.8	11 26 53.85	1.559	6 15 12.9	2.74
19	11 26 31.94	1.491	6 15 49.0	2.28	19 9 35.3	11 26 17.88	1.438	6 16 9.3	1.96
20	11 25 57.62	1.369	6 16 34.2	1.49	20 9 30.8	11 25 44.84	1.316	6 16 46.9	1.18
21	11 25 26.26	1.246	6 17 0.6	+ 0.71	21 9 26.4	11 25 14.73	1.193	6 17 5.9	+ 0.40
22	11 24 57.86	1.123	6 17 8.3	- 0.07	22 9 22.0	11 24 47.57	1.070	6 17 6.2	- 0.37
23	11 24 32.42	0.999	6 16 57.4	0.84	23 9 17.7	11 24 23.36	0.947	6 16 48.1	1.13
24	11 24 9.94	0.875	6 16 28.0	1.60	24 9 13.4	11 24 2.09	0.825	6 16 11.8	1.89
25	11 23 50.42	0.752	6 15 40.3	2.36	25 9 9.2	11 23 43.76	0.703	6 15 17.4	2.64
26	11 23 33.85	0.630	6 14 34.6	3.11	26 9 5.0	11 23 28.34	0.582	6 14 5.1	3.38
27	11 23 20.19	0.508	6 13 11.1	3.85	27 9 0.8	11 23 15.81	0.462	6 12 35.2	4.11
28	11 23 9.43	0.388	6 11 30.0	4.58	28 8 56.7	11 23 6.16	0.343	6 10 48.0	4.83
29	11 23 1.55	0.270	6 9 31.7	5.29	29 8 52.7	11 22 59.35	0.225	6 8 43.6	5.54
30	11 22 56.50	0.152	6 7 16.3	5.99	30 8 48.7	11 22 55.36	-0.108	6 6 22.4	6.23
31	11 22 54.26	-0.035	+ 6 4 44.2	- 6.68	31 8 44.7	11 22 54.14	+0.007	+ 6 3 44.7	- 6.91

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	11 22 54.26	−0.035	+ 6 4 44.2	− 6.68	1 8 44.7	11 22 54.14	+0.007	+ 6 3 44.7	− 6.91
2	11 22 54.80	+0.081	6 1 55.7	7.36	2 8 40.8	11 22 55.67	0.120	6 0 50.7	7.58
3	11 22 58.07	0.193	5 58 51.0	8.03	3 8 37.0	11 22 59.91	0.233	5 57 40.7	8.24
4	11 23 4.05	0.305	5 55 30.3	8.69	4 8 33.2	11 23 6.82	0.343	5 54 15.0	8.89
5	11 23 12.69	0.415	5 51 54.1	9.33	5 8 29.4	11 23 16.37	0.452	5 50 33.9	9.53
6	11 23 23.95	0.523	5 48 2.5	9.97	6 8 25.6	11 23 28.52	0.569	5 46 37.6	10.16
7	11 23 37.80	0.631	5 43 55.8	10.59	7 8 21.9	11 23 43.23	0.666	5 42 26.3	10.78
8	11 23 54.20	0.736	5 39 34.3	11.20	8 8 18.3	11 24 0.47	0.770	5 38 0.4	11.38
9	11 24 13.12	0.840	5 34 58.3	11.80	9 8 14.7	11 24 20.19	0.873	5 33 20.1	11.98
10	11 24 34.51	0.943	5 30 7.9	12.39	10 8 11.1	11 24 42.36	0.974	5 28 25.7	12.56
11	11 24 58.34	1.044	5 25 3.5	12.97	11 8 7.6	11 25 6.96	1.074	5 23 17.3	13.13
12	11 25 24.58	1.143	5 19 45.3	13.54	12 8 4.1	11 25 33.93	1.173	5 17 55.3	13.70
13	11 25 53.18	1.241	5 14 13.5	14.11	13 8 0.7	11 26 3.25	1.270	5 12 19.8	14.26
14	11 26 24.12	1.337	5 8 28.3	14.66	14 7 57.3	11 26 34.88	1.366	5 6 31.0	14.80
15	11 26 57.36	1.432	5 2 30.0	15.20	15 7 53.9	11 27 8.79	1.460	5 0 29.2	15.34
16	11 27 32.85	1.526	4 56 18.7	15.73	16 7 50.6	11 27 44.94	1.552	4 54 14.6	15.87
17	11 28 10.57	1.618	4 49 54.7	16.26	17 7 47.3	11 28 23.29	1.643	4 47 47.4	16.39
18	11 28 50.48	1.708	4 43 18.2	16.78	18 7 44.0	11 29 3.80	1.732	4 41 7.8	16.90
19	11 29 32.53	1.796	4 36 29.4	17.29	19 7 40.8	11 29 46.44	1.820	4 34 16.1	17.41
20	11 30 16.69	1.883	4 29 28.6	17.79	20 7 37.6	11 30 31.16	1.907	4 27 12.3	17.90
21	11 31 2.92	1.968	4 22 15.8	18.28	21 7 34.4	11 31 17.93	1.991	4 19 56.9	18.39
22	11 31 51.17	2.052	4 14 51.5	18.75	22 7 31.3	11 32 6.71	2.074	4 12 29.9	18.86
23	11 32 41.41	2.134	4 7 15.8	19.22	23 7 28.3	11 32 57.45	2.155	4 4 51.6	19.33
24	11 33 33.60	2.214	3 59 28.8	19.68	24 7 25.2	11 33 50.12	2.234	3 57 2.3	19.78
25	11 34 27.69	2.293	3 51 31.0	20.14	25 7 22.2	11 34 44.67	2.312	3 49 2.1	20.23
26	11 35 23.64	2.369	3 43 22.5	20.58	26 7 19.2	11 35 41.07	2.388	3 40 51.4	20.67
27	11 36 21.41	2.445	3 35 3.4	21.01	27 7 16.2	11 36 39.27	2.462	3 32 30.2	21.09
28	11 37 20.97	2.519	3 26 34.2	21.43	28 7 13.3	11 37 39.23	2.535	3 23 59.0	21.51
29	11 38 22.27	2.590	3 17 54.9	21.84	29 7 10.4	11 38 40.92	2.606	3 15 17.8	21.92
30	11 39 25.27	2.660	3 9 5.8	22.25	30 7 7.5	11 39 44.30	2.675	3 6 26.9	22.32
31	11 40 29.94	2.728	3 0 7.2	22.64	31 7 4.6	11 40 49.32	2.743	2 57 26.6	22.71
June 1	11 41 36.23	2.795	2 50 59.2	23.02	1 7 1.8	11 41 55.95	2.810	2 48 17.0	23.09
2	11 42 44.12	2.861	2 41 42.1	23.40	2 6 59.0	11 43 4.17	2.875	2 38 58.3	23.46
3	11 43 53.57	2.925	2 32 16.1	23.77	3 6 56.3	11 44 13.93	2.938	2 29 30.8	23.83
4	11 45 4.54	2.988	2 22 41.3	24.13	4 6 53.5	11 45 25.20	3.001	2 19 54.7	24.18
5	11 46 17.01	3.050	2 12 58.0	24.48	5 6 50.8	11 46 37.95	3.062	2 10 10.0	24.53
6	11 47 30.95	3.111	2 3 6.3	24.82	6 6 48.1	11 47 52.17	3.122	2 0 17.1	24.88
7	11 48 46.33	3.171	1 53 6.3	25.16	7 6 45.4	11 49 7.81	3.181	1 50 16.0	25.21
8	11 50 3.13	3.229	1 42 58.3	25.50	8 6 42.8	11 50 24.86	3.240	1 40 6.9	25.54
9	11 51 21.33	3.287	1 32 42.4	25.83	9 6 40.1	11 51 43.30	3.297	1 29 49.9	25.87
10	11 52 40.90	3.344	1 22 18.8	26.15	10 6 37.5	11 53 3.11	3.353	1 19 25.2	26.19
11	11 54 1.82	3.400	1 11 47.5	26.46	11 6 34.9	11 54 24.25	3.409	1 8 53.0	26.50
12	11 55 24.07	3.455	1 1 8.7	26.77	12 6 32.4	11 55 46.71	3.463	0 58 13.4	26.80
13	11 56 47.64	3.509	0 50 22.6	27.07	13 6 29.8	11 57 10.48	3.517	0 47 26.5	27.10
14	11 58 12.49	3.562	0 39 29.3	27.37	14 6 27.3	11 58 35.53	3.570	0 36 32.4	27.40
15	11 59 38.61	3.614	0 28 28.9	27.66	15 6 24.8	12 0 1.84	3.622	0 25 31.3	27.69
16	12 1 5.99	3.666	0 17 21.7	27.95	16 6 22.3	12 1 29.39	3.674	0 14 23.3	27.97
17	12 2 34.59	3.717	+ 0 6 7.6	28.23	17 6 19.9	12 2 58.16	3.724	+ 0 3 8.6	28.25
18	12 4 4.40	3.767	− 0 5 13.2	28.50	18 6 17.5	12 4 28.14	3.774	− 0 8 12.7	28.52
19	12 5 35.40	3.816	0 16 40.4	28.77	19 6 15.0	12 5 59.29	3.822	0 19 40.4	28.79
20	12 7 7.56	3.864	0 28 14.0	29.03	20 6 12.6	12 7 31.60	3.870	0 31 14.5	29.05
21	12 8 40.88	3.911	0 39 53.8	29.28	21 6 10.3	12 9 5.05	3.917	0 42 54.7	29.30
22	12 10 15.32	3.958	0 51 39.6	29.53	22 6 7.9	12 10 39.62	3.963	0 54 40.9	29.55
23	12 11 50.86	4.004	1 3 31.4	29.77	23 6 5.6	12 12 15.29	4.009	1 6 33.0	29.79
24	12 13 27.50	4.048	1 15 28.8	30.01	24 6 3.2	12 13 52.04	4.053	1 18 30.6	30.02
25	12 15 5.20	4.092	1 27 31.8	30.24	25 6 0.9	12 15 29.85	4.097	1 30 33.8	30.24
26	12 16 43.95	4.136	1 39 40.1	30.46	26 5 58.6	12 17 8.70	4.140	1 42 42.3	30.46
27	12 18 23.73	4.179	1 51 53.7	30.67	27 5 56.4	12 18 48.58	4.182	1 54 56.0	30.67
28	12 20 4.52	4.221	2 4 12.3	30.87	28 5 54.1	12 20 29.46	4.224	2 7 14.6	30.88
29	12 21 46.31	4.262	2 16 35.7	31.07	29 5 51.9	12 22 11.33	4.265	2 19 38.1	31.08
30	12 23 29.08	4.303	2 29 3.9	31.27	30 5 49.7	12 23 54.18	4.305	2 32 6.3	31.27
31	12 25 12.82	+4.342	− 2 41 36.7	−31.46	31 5 47.5	12 25 37.99	+4.345	− 2 44 39.0	−31.45

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	12 25 12.82	+4.342	- 2 41 36.7	-31.46	1 5 47.5	12 25 37.99	+4.345	- 2 44 39.0	-31.45
2	12 26 57.50	4.381	2 54 13.9	31.64	2 5 45.3	12 27 22.74	4.384	2 57 16.1	31.63
3	12 28 43.13	4.420	3 6 55.3	31.82	3 5 43.1	12 29 8.43	4.423	3 9 57.3	31.81
4	12 30 29.69	4.459	3 19 40.9	31.98	4 5 40.9	12 30 55.05	4.461	3 22 42.7	31.98
5	12 32 17.17	4.497	3 32 30.4	32.14	5 5 38.8	12 32 42.58	4.499	3 35 32.1	32.14
6	12 34 5.56	4.535	3 45 23.9	32.30	6 5 36.6	12 34 31.03	4.537	3 48 25.2	32.29
7	12 35 54.85	4.573	3 58 21.0	32.45	7 5 34.5	12 36 20.37	4.575	4 1 22.1	32.44
8	12 37 45.05	4.610	4 11 21.7	32.60	8 5 32.4	12 38 10.61	4.612	4 14 22.5	32.59
9	12 39 36.13	4.647	4 24 26.0	32.75	9 5 30.3	12 40 1.74	4.649	4 27 26.4	32.73
10	12 41 28.11	4.684	4 37 33.6	32.89	10 5 28.3	12 41 53.76	4.686	4 40 33.6	32.87
11	12 43 20.97	4.721	4 50 44.5	33.02	11 5 26.2	12 43 46.66	4.722	4 53 44.1	33.00
12	12 45 14.71	4.758	5 3 58.5	33.15	12 5 24.2	12 45 40.43	4.759	5 6 57.7	33.13
13	12 47 9.32	4.794	5 17 15.6	33.28	13 5 22.2	12 47 35.08	4.795	5 20 14.3	33.25
14	12 49 4.80	4.830	5 30 35.6	33.39	14 5 20.1	12 49 30.60	4.831	5 33 33.9	33.37
15	12 51 1.16	4.866	5 43 58.4	33.50	15 5 18.1	12 51 26.98	4.867	5 46 56.2	33.48
16	12 52 58.36	4.902	5 57 23.9	33.61	16 5 16.1	12 53 24.21	4.903	6 0 21.1	33.59
17	12 54 56.43	4.938	6 10 51.9	33.71	17 5 14.2	12 55 22.30	4.938	6 13 48.5	33.69
18	12 56 55.34	4.972	6 24 22.2	33.81	18 5 12.2	12 57 21.23	4.973	6 27 18.3	33.79
19	12 58 55.09	5.007	6 37 54.8	33.90	19 5 10.3	12 59 21.00	5.008	6 40 50.2	33.88
20	13 0 55.67	5.041	6 51 29.5	33.99	20 5 8.4	13 1 21.60	5.042	6 54 24.2	33.96
21	13 2 57.09	5.076	7 5 6.2	34.07	21 5 6.5	13 3 23.03	5.077	7 8 0.2	34.03
22	13 4 59.32	5.110	7 18 44.6	34.13	22 5 4.6	13 5 25.28	5.111	7 21 37.9	34.10
23	13 7 2.37	5.144	7 32 24.6	34.19	23 5 2.7	13 7 28.34	5.144	7 35 17.1	34.17
24	13 9 6.23	5.177	7 46 6.0	34.25	24 5 0.8	13 9 32.20	5.178	7 48 57.8	34.22
25	13 11 10.89	5.211	7 59 48.8	34.30	25 4 58.9	13 11 36.87	5.211	8 2 39.8	34.27
26	13 13 16.35	5.244	8 13 32.7	34.35	26 4 57.1	13 13 42.33	5.244	8 16 22.8	34.31
27	13 15 22.59	5.277	8 27 17.5	34.39	27 4 55.3	13 15 48.57	5.277	8 30 6.7	34.35
28	13 17 29.62	5.309	8 41 3.2	34.41	28 4 53.4	13 17 55.60	5.309	8 43 51.5	34.38
29	13 19 37.43	5.342	8 54 49.4	34.43	29 4 51.6	13 20 3.41	5.342	8 57 36.8	34.40
30	13 21 46.02	5.374	9 8 36.2	34.45	30 4 49.8	13 22 12.00	5.374	9 11 22.6	34.41
31	13 23 55.39	5.407	9 22 23.3	34.46	31 4 48.1	13 24 21.36	5.406	9 25 8.7	34.42
Aug. 1	13 26 5.53	5.439	9 36 10.5	34.47	1 4 46.3	13 26 31.50	5.439	9 38 55.0	34.43
2	13 28 16.45	5.471	9 49 57.8	34.47	2 4 44.5	13 28 42.41	5.471	9 52 41.2	34.43
3	13 30 28.14	5.503	10 3 44.9	34.46	3 4 42.8	13 30 54.10	5.503	10 6 27.3	34.42
4	13 32 40.61	5.536	10 17 31.8	34.45	4 4 41.1	13 33 6.56	5.535	10 20 13.1	34.40
5	13 34 53.86	5.568	10 31 18.2	34.43	5 4 39.3	13 35 19.80	5.568	10 33 58.5	34.38
6	13 37 7.89	5.601	10 45 4.1	34.40	6 4 37.6	13 37 33.82	5.601	10 47 43.3	34.35
7	13 39 22.70	5.634	10 58 49.4	34.37	7 4 35.9	13 39 48.63	5.633	11 1 27.5	34.32
8	13 41 38.30	5.667	11 12 33.8	34.33	8 4 34.3	13 42 4.22	5.666	11 15 10.8	34.28
9	13 43 54.69	5.699	11 26 17.3	34.29	9 4 32.6	13 44 20.59	5.699	11 28 53.1	34.24
10	13 46 11.86	5.732	11 39 59.7	34.24	10 4 30.9	13 46 37.76	5.732	11 42 34.3	34.19
11	13 48 29.83	5.765	11 53 40.9	34.19	11 4 29.3	13 48 55.72	5.765	11 56 14.3	34.14
12	13 50 48.60	5.798	12 7 20.7	34.13	12 4 27.7	13 51 14.48	5.798	12 9 52.9	34.08
13	13 53 8.16	5.832	12 20 58.9	34.05	13 4 26.1	13 53 34.03	5.831	12 23 29.9	34.01
14	13 55 28.52	5.865	12 34 35.4	33.98	14 4 24.5	13 55 54.38	5.864	12 37 5.2	33.93
15	13 57 49.67	5.898	12 48 10.1	33.90	15 4 22.9	13 58 15.53	5.898	12 50 38.6	33.85
16	14 0 11.62	5.931	13 1 42.8	33.81	16 4 21.3	14 0 37.47	5.931	13 4 10.0	33.76
17	14 2 34.37	5.964	13 15 13.3	33.72	17 4 19.8	14 3 0.21	5.964	13 17 39.2	33.67
18	14 4 57.91	5.998	13 28 41.4	33.62	18 4 18.2	14 5 23.74	5.997	13 31 6.0	33.56
19	14 7 22.25	6.031	13 42 6.9	33.50	19 4 16.7	14 7 48.06	6.030	13 44 30.2	33.45
20	14 9 47.39	6.064	13 55 29.7	33.38	20 4 15.2	14 10 13.18	6.063	13 57 51.7	33.33
21	14 12 13.31	6.097	14 8 49.7	33.26	21 4 13.6	14 12 39.09	6.096	14 11 10.3	33.21
22	14 14 40.02	6.129	14 22 6.5	33.13	22 4 12.2	14 15 5.79	6.129	14 24 25.7	33.08
23	14 17 7.53	6.162	14 35 20.0	32.99	23 4 10.7	14 17 33.28	6.162	14 37 37.8	32.93
24	14 19 35.82	6.195	14 48 30.1	32.84	24 4 9.2	14 20 1.56	6.195	14 50 46.5	32.78
25	14 22 4.89	6.228	15 1 36.5	32.69	25 4 7.8	14 22 30.62	6.227	15 3 51.4	32.63
26	14 24 34.76	6.261	15 14 39.0	32.52	26 4 6.3	14 25 0.47	6.260	15 16 52.5	32.46
27	14 27 5.41	6.294	15 27 37.5	32.35	27 4 4.9	14 27 31.11	6.293	15 29 49.5	32.29
28	14 29 36.85	6.327	15 40 31.7	32.17	28 4 3.5	14 30 2.53	6.326	15 42 42.2	32.11
29	14 32 9.07	6.359	15 53 21.6	31.98	29 4 2.1	14 32 34.74	6.358	15 55 30.5	31.92
30	14 34 42.08	6.392	16 6 6.8	31.79	30 4 0.7	14 35 7.73	6.391	16 8 14.2	31.72
31	14 37 15.88	+6.425	-16 18 47.2	-31.59	31 3 59.3	14 37 41.52	+6.424	-16 20 53.1	-31.52

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1871.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	14 39 50.48	+6.458	−16 31 22.7	−31.37	1 3 57.9	14 40 16.10	+6.457	−16 33 27.0	−31.31
2	14 42 25.86	6.491	16 43 53.1	31.15	2 3 56.6	14 42 51.47	6.490	16 45 55.8	31.09
3	14 45 2.05	6.524	16 56 18.1	30.93	3 3 55.3	14 45 27.64	6.524	16 58 19.3	30.87
4	14 47 39.03	6.558	17 8 37.7	30.70	4 3 53.9	14 48 4.61	6.557	17 10 37.3	30.63
5	14 50 16.81	6.591	17 20 51.7	30.46	5 3 52.6	14 50 42.38	6.591	17 22 49.7	30.39
6	14 52 55.41	6.625	17 32 59.8	30.22	6 3 51.3	14 53 20.96	6.624	17 34 56.3	30.15
7	14 55 34.81	6.658	17 45 2.0	29.97	7 3 50.0	14 56 0.35	6.658	17 46 56.8	29.89
8	14 58 15.03	6.692	17 56 58.0	29.70	8 3 48.8	14 58 40.55	6.692	17 58 51.1	29.63
9	15 0 56.06	6.726	18 8 47.6	29.43	9 3 47.5	15 1 21.57	6.726	18 10 39.1	29.36
10	15 3 37.90	6.760	18 20 30.7	29.16	10 3 46.3	15 4 3.40	6.760	18 22 20.6	29.09
11	15 6 20.55	6.794	18 32 7.1	28.87	11 3 45.0	15 6 46.05	6.794	18 33 55.3	28.80
12	15 9 4.02	6.828	18 43 36.5	28.58	12 3 43.8	15 9 29.51	6.828	18 45 23.1	28.51
13	15 11 48.31	6.862	18 54 58.9	28.28	13 3 42.6	15 12 13.79	6.862	18 56 43.7	28.21
14	15 14 33.41	6.896	19 6 13.9	27.97	14 3 41.4	15 14 58.88	6.896	19 7 57.1	27.90
15	15 17 19.33	6.930	19 17 21.5	27.65	15 3 40.3	15 17 44.78	6.929	19 19 3.0	27.59
16	15 20 6.05	6.963	19 28 21.4	27.33	16 3 39.1	15 20 31.49	6.963	19 30 1.1	27.26
17	15 22 53.57	6.997	19 39 13.4	27.00	17 3 38.0	15 23 19.00	6.996	19 40 51.4	26.93
18	15 25 41.90	7.030	19 49 57.3	26.66	18 3 36.8	15 26 7.32	7.030	19 51 33.5	26.58
19	15 28 31.02	7.063	20 0 32.8	26.30	19 3 35.7	15 28 56.43	7.063	20 2 7.3	26.23
20	15 31 20.94	7.096	20 10 59.9	25.94	20 3 34.6	15 31 46.33	7.096	20 12 32.6	25.87
21	15 34 11.64	7.129	20 21 18.2	25.57	21 3 33.5	15 34 37.02	7.128	20 22 49.1	25.50
22	15 37 3.13	7.161	20 31 27.6	25.20	22 3 32.4	15 37 28.49	7.161	20 32 56.7	25.13
23	15 39 55.39	7.194	20 41 27.8	24.82	23 3 31.4	15 40 20.73	7.193	20 42 55.1	24.74
24	15 42 48.42	7.226	20 51 18.7	24.42	24 3 30.3	15 43 13.75	7.225	20 52 44.2	24.35
25	15 45 42.21	7.258	21 1 0.0	24.02	25 3 29.3	15 46 7.53	7.257	21 2 23.7	23.94
26	15 48 36.77	7.289	21 10 31.5	23.61	26 3 28.2	15 49 2.08	7.288	21 11 53.4	23.53
27	15 51 32.09	7.321	21 19 53.1	23.19	27 3 27.2	15 51 57.38	7.320	21 21 13.1	23.11
28	15 54 28.16	7.352	21 29 4.6	22.76	28 3 26.2	15 54 53.43	7.351	21 30 22.7	22.68
29	15 57 24.97	7.383	21 38 5.7	22.33	29 3 25.2	15 57 50.23	7.382	21 39 21.9	22.25
30	16 0 22.54	7.414	21 46 56.2	21.88	30 3 24.2	16 0 47.78	7.413	21 48 10.6	21.81
Oct. 1	16 3 20.84	7.445	21 55 36.1	21.43	1 3 23.3	16 3 46.07	7.444	21 56 48.6	21.36
2	16 6 19.88	7.476	22 4 5.1	20.98	2 3 22.3	16 6 45.10	7.475	22 5 15.7	20.90
3	16 9 19.66	7.506	22 12 23.1	20.51	3 3 21.4	16 9 44.86	7.505	22 13 31.8	20.44
4	16 12 20.17	7.536	22 20 29.8	20.04	4 3 20.4	16 12 45.35	7.536	22 21 36.6	19.96
5	16 15 21.40	7.566	22 28 25.0	19.56	5 3 19.5	16 15 46.57	7.566	22 29 30.0	19.48
6	16 18 23.35	7.596	22 36 8.7	19.08	6 3 18.6	16 18 48.51	7.596	22 37 11.8	19.00
7	16 21 26.02	7.626	22 43 40.6	18.58	7 3 17.7	16 21 51.16	7.625	22 44 41.8	18.50
8	16 24 29.40	7.655	22 51 0.6	18.08	8 3 16.8	16 24 54.52	7.655	22 51 59.8	18.00
9	16 27 33.48	7.684	22 58 8.4	17.57	9 3 15.9	16 27 58.58	7.684	22 59 5.7	17.49
10	16 30 38.25	7.713	23 5 3.9	17.06	10 3 15.1	16 31 3.33	7.712	23 5 59.2	16.97
11	16 33 43.70	7.741	23 11 46.9	16.53	11 3 14.2	16 34 8.77	7.741	23 12 40.3	16.45
12	16 36 49.83	7.769	23 18 17.3	16.00	12 3 13.4	16 37 14.88	7.768	23 19 8.8	15.92
13	16 39 56.63	7.797	23 24 34.9	15.46	13 3 12.6	16 40 21.66	7.796	23 25 24.4	15.38
14	16 43 4.08	7.824	23 30 39.4	14.91	14 3 11.8	16 43 29.09	7.823	23 31 26.9	14.83
15	16 46 12.17	7.851	23 36 30.7	14.36	15 3 11.0	16 46 37.15	7.849	23 37 16.3	14.28
16	16 49 20.88	7.877	23 42 8.7	13.80	16 3 10.2	16 49 45.85	7.875	23 42 52.3	13.72
17	16 52 30.21	7.901	23 47 33.1	13.23	17 3 9.4	16 52 55.16	7.900	23 48 14.8	13.15
18	16 55 40.14	7.926	23 52 43.9	12.66	18 3 8.6	16 56 5.06	7.925	23 53 23.6	12.58
19	16 58 50.65	7.950	23 57 40.8	12.08	19 3 7.8	16 59 15.54	7.949	23 58 18.5	12.00
20	17 2 1.73	7.973	24 2 23.7	11.49	20 3 7.1	17 2 26.60	7.972	24 2 59.4	11.41
21	17 5 13.37	7.996	24 6 52.4	10.90	21 3 6.3	17 5 38.21	7.995	24 7 26.1	10.82
22	17 8 25.54	8.018	24 11 6.8	10.30	22 3 5.6	17 8 50.35	8.017	24 11 38.5	10.22
23	17 11 38.24	8.040	24 15 6.7	9.69	23 3 4.9	17 12 3.01	8.038	24 15 36.4	9.61
24	17 14 51.45	8.060	24 18 52.0	9.08	24 3 4.1	17 15 16.19	8.059	24 19 19.8	9.00
25	17 18 5.14	8.080	24 22 22.6	8.47	25 3 3.4	17 18 29.85	8.079	24 22 48.4	8.38
26	17 21 19.32	8.100	24 25 38.3	7.85	26 3 2.7	17 21 43.99	8.099	24 26 2.1	7.76
27	17 24 33.96	8.119	24 28 39.1	7.21	27 3 2.0	17 24 58.60	8.118	24 29 0.8	7.13
28	17 27 49.06	8.138	24 31 24.7	6.58	28 3 1.3	17 28 13.65	8.136	24 31 44.5	6.50
29	17 31 4.58	8.156	24 33 55.1	5.95	29 3 0.6	17 31 29.14	8.154	24 34 12.9	5.87
30	17 34 20.53	8.173	24 36 10.2	5.31	30 3 0.0	17 34 45.05	8.171	24 36 26.0	5.23
31	17 37 36.89	8.190	24 38 9.9	4.66	31 2 59.3	17 38 1.36	8.188	24 38 23.7	4.58
32	17 40 53.64	+8.206	−24 39 54.0	− 4.01	32 2 58.6	17 41 18.07	+8.204	−24 40 5.9	− 3.93

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	17 40 53.64	+8.206	−24 39 54.0	− 4.01	1 2 58.6	17 41 18.07	+8.204	−24 40 5.9	− 3.93
2	17 44 10.76	8.221	24 41 22.5	3.36	2 2 58.0	17 44 35.15	8.219	24 41 32.4	3.28
3	17 47 28.25	8.236	24 42 35.3	2.71	3 2 57.3	17 47 52.60	8.234	24 42 43.2	2.62
4	17 50 46.09	8.250	24 43 32.3	2.05	4 2 56.7	17 51 10.39	8.248	24 43 38.2	1.96
5	17 54 4.27	8.264	24 44 13.5	1.38	5 2 56.0	17 54 28.52	8.262	24 44 17.4	1.30
6	17 57 22.76	8.277	24 44 38.7	0.72	6 2 55.4	17 57 46.96	8.275	24 44 40.7	− 0.63
7	18 0 41.55	8.290	24 44 47.8	− 0.05	7 2 54.8	18 1 5.70	8.287	24 44 47.9	+ 0.03
8	18 4 0.63	8.301	24 44 40.9	+ 0.62	8 2 54.2	18 4 24.73	8.298	24 44 39.0	0.71
9	18 7 19.97	8.311	24 44 17.9	1.29	9 2 53.5	18 7 44.02	8.309	24 44 14.0	1.38
10	18 10 39.57	8.321	24 43 38.6	1.97	10 2 52.9	18 11 3.56	8.319	24 43 32.8	2.06
11	18 13 59.40	8.331	24 42 43.0	2.65	11 2 52.3	18 14 23.32	8.328	24 42 35.3	2.73
12	18 17 19.44	8.339	24 41 31.2	3.33	12 2 51.7	18 17 43.30	8.336	24 41 21.6	3.41
13	18 20 39.67	8.347	24 40 3.0	4.01	13 2 51.1	18 21 3.47	8.344	24 39 51.5	4.10
14	18 24 0.07	8.353	24 38 18.5	4.70	14 2 50.5	18 24 23.80	8.350	24 38 5.0	4.78
15	18 27 20.61	8.359	24 36 17.5	5.39	15 2 49.9	18 27 44.28	8.356	24 36 2.1	5.46
16	18 30 41.29	8.364	24 34 0.1	6.07	16 2 49.3	18 31 4.89	8.361	24 33 42.8	6.15
17	18 34 2.07	8.368	24 31 26.2	6.76	17 2 48.7	18 34 25.60	8.365	24 31 7.1	6.83
18	18 37 22.94	8.371	24 28 35.9	7.45	18 2 48.1	18 37 46.40	8.368	24 28 14.9	7.52
19	18 40 43.88	8.374	24 25 29.1	8.13	19 2 47.5	18 41 7.26	8.370	24 25 6.3	8.20
20	18 44 4.87	8.375	24 22 5.8	8.82	20 2 46.9	18 44 28.17	8.372	24 21 41.2	8.89
21	18 47 25.88	8.376	24 18 26.1	9.50	21 2 46.3	18 47 49.10	8.372	24 17 59.7	9.57
22	18 50 46.90	8.376	24 14 30.0	10.19	22 2 45.7	18 51 10.04	8.372	24 14 1.8	10.25
23	18 54 7.91	8.375	24 10 17.5	10.87	23 2 45.2	18 54 30.97	8.371	24 9 47.5	10.94
24	18 57 28.90	8.374	24 5 48.6	11.55	24 2 44.6	18 57 51.87	8.370	24 5 16.8	11.62
25	19 0 49.84	8.371	24 1 3.3	12.23	25 2 44.0	19 1 12.72	8.368	24 0 29.8	12.30
26	19 4 10.72	8.368	23 56 1.8	12.90	26 2 43.4	19 4 33.51	8.365	23 55 26.5	12.97
27	19 7 31.53	8.365	23 50 44.0	13.57	27 2 42.8	19 7 54.23	8.361	23 50 7.0	13.65
28	19 10 52.25	8.361	23 45 10.0	14.25	28 2 42.2	19 11 14.85	8.357	23 44 31.4	14.32
29	19 14 12.85	8.356	23 39 19.9	14.92	29 2 41.6	19 14 35.36	8.352	23 38 39.6	14.99
30	19 17 33.34	8.351	23 33 13.7	15.59	30 2 41.0	19 17 55.75	8.347	23 32 31.8	15.66
Dec. 1	19 20 53.70	8.346	23 26 51.5	16.26	1 2 40.4	19 21 16.01	8.341	23 26 8.0	16.32
2	19 24 13.91	8.340	23 20 13.4	16.92	2 2 39.8	19 24 36.12	8.335	23 19 28.2	16.99
3	19 27 33.97	8.332	23 13 19.4	17.58	3 2 39.2	19 27 56.07	8.328	23 12 32.6	17.64
4	19 30 53.85	8.324	23 6 9.6	18.24	4 2 38.6	19 31 15.84	8.320	23 5 21.3	18.30
5	19 34 13.54	8.316	22 58 44.1	18.89	5 2 37.9	19 34 35.43	8.312	22 57 54.3	18.95
6	19 37 33.04	8.308	22 51 3.0	19.54	6 2 37.3	19 37 54.82	8.303	22 50 11.7	19.60
7	19 40 52.32	8.299	22 43 6.4	20.18	7 2 36.7	19 41 13.99	8.294	22 42 13.6	20.24
8	19 44 11.37	8.289	22 34 54.4	20.82	8 2 36.1	19 44 32.93	8.284	22 34 0.2	20.88
9	19 47 30.19	8.279	22 26 27.1	21.45	9 2 35.4	19 47 51.64	8.274	22 25 31.4	21.51
10	19 50 48.75	8.268	22 17 44.6	22.08	10 2 34.8	19 51 10.08	8.263	22 16 47.5	22.14
11	19 54 7.04	8.256	22 8 47.1	22.71	11 2 34.2	19 54 28.26	8.252	22 7 48.6	22.77
12	19 57 25.06	8.244	21 59 34.6	23.33	12 2 33.5	19 57 46.15	8.240	21 58 34.8	23.38
13	20 0 42.78	8.232	21 50 7.3	23.94	13 2 32.9	20 1 3.75	8.227	21 49 6.2	24.00
14	20 4 0.19	8.219	21 40 25.3	24.55	14 2 32.2	20 4 21.04	8.214	21 39 23.0	24.61
15	20 7 17.27	8.205	21 30 28.8	25.16	15 2 31.6	20 7 38.00	8.200	21 29 25.2	25.21
16	20 10 34.03	8.191	21 20 17.9	25.76	16 2 30.9	20 10 54.62	8.186	21 19 13.1	25.80
17	20 13 50.43	8.176	21 9 52.8	26.35	17 2 30.2	20 14 10.90	8.171	21 8 46.7	26.39
18	20 17 6.48	8.161	20 59 13.5	26.93	18 2 29.6	20 17 26.82	8.156	20 58 6.3	26.97
19	20 20 22.16	8.146	20 48 20.3	27.50	19 2 28.9	20 20 42.37	8.140	20 47 12.0	27.55
20	20 23 37.46	8.130	20 37 13.4	28.07	20 2 28.2	20 23 57.54	8.124	20 36 4.0	28.12
21	20 26 52.38	8.113	20 25 52.8	28.64	21 2 27.5	20 27 12.32	8.108	20 24 42.3	28.68
22	20 30 6.89	8.096	20 14 18.8	29.20	22 2 26.8	20 30 26.70	8.091	20 13 7.3	29.24
23	20 33 21.00	8.079	20 2 31.6	29.75	23 2 26.1	20 33 40.68	8.074	20 1 19.1	29.78
24	20 36 34.71	8.062	19 50 31.3	30.28	24 2 25.4	20 36 54.24	8.057	19 49 17.8	30.32
25	20 39 48.00	8.045	19 38 18.0	30.81	25 2 24.7	20 40 7.39	8.039	19 37 3.6	30.86
26	20 43 0.86	8.027	19 25 52.0	31.34	26 2 23.9	20 43 20.12	8.021	19 24 36.8	31.38
27	20 46 13.30	8.009	19 13 13.5	31.86	27 2 23.2	20 46 32.42	8.004	19 11 57.4	31.90
28	20 49 25.32	7.992	19 0 22.6	32.37	28 2 22.4	20 49 44.29	7.986	18 59 5.6	32.41
29	20 52 36.90	7.974	18 47 19.4	32.88	29 2 21.7	20 52 55.73	7.968	18 46 1.7	32.91
30	20 55 48.05	7.956	18 34 4.3	33.38	30 2 20.9	20 56 6.74	7.950	18 32 45.8	33.41
31	20 58 58.77	7.937	18 20 37.3	33.86	31 2 20.2	20 59 17.31	7.932	18 19 18.1	33.90
32	21 2 9.05	+7.919	−18 6 58.7	+34.34	32 2 19.4	21 2 27.45	+7.913	−18 5 38.8	+34.38

JUPITER, 1871.

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 0	5 12 22.66	-1.285	+22 33 25.9	-1.03	0 10 30.6	5 12 9.19	-1.269	+22 33 15.1	-1.02
1	5 11 52.07	1.264	22 33 1.4	1.01	1 10 26.3	5 11 38.92	1.250	22 32 50.8	1.00
2	5 11 22.00	1.242	22 32 37.3	1.00	2 10 21.9	5 11 9.18	1.229	22 32 26.8	0.99
3	5 10 52.45	1.220	22 32 13.4	0.99	3 10 17.5	5 10 39.95	1.207	22 32 3.2	0.98
4	5 10 23.44	1.197	22 31 50.0	0.97	4 10 13.1	5 10 11.26	1.184	22 31 40.1	0.96
5	5 9 54.98	1.173	22 31 27.0	0.95	5 10 8.7	5 9 43.13	1.160	22 31 17.4	0.94
6	5 9 27.10	1.149	22 31 4.4	0.93	6 10 4.3	5 9 15.58	1.135	22 30 55.1	0.92
7	5 8 59.82	1.124	22 30 42.3	0.91	7 9 59.9	5 8 48.63	1.109	22 30 33.3	0.90
8	5 8 33.15	1.098	22 30 20.8	0.89	8 9 55.6	5 8 22.30	1.083	22 30 12.1	0.88
9	5 8 7.11	1.071	22 29 59.9	0.87	9 9 51.2	5 7 56.60	1.057	22 29 51.5	0.85
10	5 7 41.72	1.044	22 29 39.5	0.84	10 9 46.8	5 7 31.55	1.029	22 29 31.4	0.83
11	5 7 17.00	1.016	22 29 19.7	0.81	11 9 42.5	5 7 7.17	1.001	22 29 11.9	0.80
12	5 6 52.96	0.987	22 29 0.6	0.78	12 9 38.2	5 6 43.48	0.972	22 28 53.1	0.77
13	5 6 29.61	0.958	22 28 42.2	0.75	13 9 33.9	5 6 20.49	0.943	22 28 35.0	0.74
14	5 6 6.97	0.928	22 28 24.5	0.72	14 9 29.5	5 5 58.21	0.913	22 28 17.7	0.71
15	5 5 45.05	0.898	22 28 7.6	0.69	15 9 25.2	5 5 36.65	0.883	22 28 1.1	0.68
16	5 5 23.87	0.867	22 27 51.5	0.66	16 9 21.0	5 5 15.82	0.852	22 27 45.4	0.65
17	5 5 3.44	0.835	22 27 36.2	0.62	17 9 16.7	5 4 55.75	0.821	22 27 30.5	0.61
18	5 4 43.78	0.803	22 27 21.7	0.58	18 9 12.4	5 4 36.45	0.788	22 27 16.4	0.57
19	5 4 24.90	0.770	22 27 8.2	0.54	19 9 8.2	5 4 17.93	0.755	22 27 3.3	0.53
20	5 4 6.81	0.737	22 26 55.7	0.50	20 9 4.0	5 4 0.19	0.722	22 26 51.2	0.49
21	5 3 49.52	0.704	22 26 44.1	0.46	21 8 59.8	5 3 43.25	0.689	22 26 40.0	0.45
22	5 3 33.04	0.670	22 26 33.5	0.42	22 8 55.6	5 3 27.12	0.655	22 26 29.8	0.41
23	5 3 17.38	0.635	22 26 23.9	0.38	23 8 51.4	5 3 11.81	0.621	22 26 20.6	0.36
24	5 3 2.55	0.600	22 26 15.3	0.34	24 8 47.2	5 2 57.33	0.586	22 26 12.4	0.32
25	5 2 48.56	0.565	22 26 7.8	0.29	25 8 43.0	5 2 43.69	0.551	22 26 5.3	0.27
26	5 2 35.42	0.530	22 26 1.4	0.25	26 8 38.9	5 2 30.89	0.516	22 25 59.3	0.23
27	5 2 23.12	0.495	22 25 56.1	0.21	27 8 34.8	5 2 18.93	0.481	22 25 54.5	0.18
28	5 2 11.67	0.459	22 25 51.9	0.16	28 8 30.7	5 2 7.82	0.445	22 25 50.7	0.14
29	5 2 1.08	0.423	22 25 48.8	0.11	29 8 26.6	5 1 57.57	0.409	22 25 48.0	0.09
30	5 1 51.36	0.387	22 25 46.8	0.06	30 8 22.5	5 1 48.17	0.374	22 25 46.4	-0.04
31	5 1 42.50	0.351	22 25 46.0	-0.01	31 8 18.4	5 1 39.63	0.338	22 25 46.0	+0.01
Feb. 1	5 1 34.50	0.315	22 25 46.4	+0.04	1 8 14.3	5 1 31.95	0.302	22 25 46.8	0.06
2	5 1 27.37	0.279	22 25 48.0	0.09	2 8 10.2	5 1 25.14	0.266	22 25 48.8	0.11
3	5 1 21.11	0.242	22 25 50.8	0.14	3 8 6.2	5 1 19.19	0.230	22 25 52.0	0.16
4	5 1 15.72	0.206	22 25 54.8	0.19	4 8 2.2	5 1 14.11	0.194	22 25 56.4	0.21
5	5 1 11.20	0.170	22 26 0.0	0.24	5 7 58.2	5 1 9.89	0.158	22 26 2.0	0.26
6	5 1 7.54	0.134	22 26 6.3	0.29	6 7 54.2	5 1 6.53	0.122	22 26 8.7	0.31
7	5 1 4.76	0.098	22 26 13.8	0.34	7 7 50.2	5 1 4.04	0.086	22 26 16.5	0.36
8	5 1 2.85	0.061	22 26 22.5	0.39	8 7 46.2	5 1 2.42	0.050	22 26 25.5	0.40
9	5 1 1.81	-0.025	22 26 32.3	0.44	9 7 42.3	5 1 1.66	-0.014	22 26 35.7	0.45
10	5 1 1.64	+0.012	22 26 43.3	0.49	10 7 38.4	5 1 1.77	+0.023	22 26 47.1	0.50
11	5 1 2.35	0.048	22 26 55.5	0.54	11 7 34.5	5 1 2.75	0.059	22 26 59.6	0.55
12	5 1 3.93	0.084	22 27 8.9	0.59	12 7 30.6	5 1 4.60	0.095	22 27 13.4	0.60
13	5 1 6.38	0.120	22 27 23.5	0.64	13 7 26.7	5 1 7.31	0.131	22 27 28.3	0.65
14	5 1 9.69	0.156	22 27 39.2	0.68	14 7 22.8	5 1 10.88	0.167	22 27 44.3	0.70
15	5 1 13.87	0.192	22 27 56.1	0.73	15 7 19.0	5 1 15.31	0.203	22 28 1.5	0.75
16	5 1 18.91	0.228	22 28 14.2	0.78	16 7 15.1	5 1 20.60	0.238	22 28 19.9	0.79
17	5 1 24.81	0.264	22 28 33.4	0.83	17 7 11.3	5 1 26.74	0.274	22 28 39.4	0.84
18	5 1 31.57	0.300	22 28 53.8	0.88	18 7 7.5	5 1 33.74	0.309	22 29 0.1	0.89
19	5 1 39.18	0.335	22 29 15.3	0.93	19 7 3.7	5 1 41.58	0.344	22 29 21.9	0.94
20	5 1 47.64	0.371	22 29 37.9	0.98	20 6 59.9	5 1 50.26	0.379	22 29 44.8	0.98
21	5 1 56.94	0.406	22 30 1.6	1.02	21 6 56.1	5 1 59.78	0.414	22 30 8.7	1.03
22	5 2 7.09	0.441	22 30 26.4	1.06	22 6 52.3	5 2 10.14	0.449	22 30 33.7	1.07
23	5 2 18.07	0.475	22 30 52.2	1.10	23 6 48.6	5 2 21.33	0.484	22 30 59.7	1.11
24	5 2 29.88	0.510	22 31 19.1	1.14	24 6 44.9	5 2 33.34	0.518	22 31 26.8	1.15
25	5 2 42.52	0.544	22 31 47.0	1.18	25 6 41.2	5 2 46.17	0.552	22 31 54.9	1.19
26	5 2 55.97	0.578	22 32 15.9	1.22	26 6 37.5	5 2 59.82	0.586	22 32 24.0	1.23
27	5 3 10.24	0.612	22 32 45.7	1.26	27 6 33.8	5 3 14.27	0.619	22 32 54.0	1.27
28	5 3 25.31	0.645	22 33 16.5	1.31	28 6 30.1	5 3 29.52	0.652	22 33 25.0	1.31
29	5 3 41.18	0.678	22 33 48.3	1.35	29 6 26.4	5 3 45.56	0.685	22 33 56.9	1.35
30	5 3 57.83	+0.711	+22 34 20.9	+1.39	30 6 22.8	5 4 2.39	+0.717	+22 34 29.7	+1.39

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	5 3 41.18	+0.678	+22 33 48.3	+1.35	1 6 26.4	5 3 45.56	+0.685	+22 33 56.9	+1.35
2	5 3 57.83	0.711	22 34 20.9	1.39	2 6 22.8	5 4 2.39	0.717	22 34 29.7	1.39
3	5 4 15.27	0.743	22 34 54.5	1.42	3 6 19.1	5 4 19.99	0.749	22 35 3.4	1.43
4	5 4 33.48	0.775	22 35 29.0	1.45	4 6 15.5	5 4 38.36	0.781	22 35 38.0	1.46
5	5 4 52.46	0.807	22 36 4.3	1.48	5 6 11.9	5 4 57.49	0.813	22 36 13.4	1.49
6	5 5 12.19	0.838	22 36 40.1	1.52	6 6 8.3	5 5 17.36	0.844	22 36 49.4	1.52
7	5 5 32.67	0.869	22 37 16.7	1.55	7 6 4.7	5 5 37.98	0.875	22 37 26.1	1.55
8	5 5 53.90	0.900	22 37 54.1	1.58	8 6 1.1	5 5 59.34	0.905	22 38 3.6	1.58
9	5 6 15.87	0.930	22 38 32.2	1.61	9 5 57.5	5 6 21.43	0.935	22 38 41.8	1.61
10	5 6 38.56	0.960	22 39 11.1	1.64	10 5 54.0	5 6 44.24	0.966	22 39 20.7	1.64
11	5 7 1.98	0.990	22 39 50.6	1.66	11 5 50.5	5 7 7.78	0.996	22 40 0.3	1.67
12	5 7 26.12	1.020	22 40 30.7	1.68	12 5 47.0	5 7 32.03	1.026	22 40 40.4	1.69
13	5 7 50.97	1.050	22 41 11.4	1.70	13 5 43.5	5 7 56.99	1.055	22 41 21.1	1.71
14	5 8 16.53	1.079	22 41 52.6	1.72	14 5 40.0	5 8 22.65	1.084	22 42 2.4	1.73
15	5 8 42.78	1.108	22 42 34.4	1.74	15 5 36.5	5 8 49.00	1.112	22 42 44.2	1.75
16	5 9 9.72	1.137	22 43 16.7	1.76	16 5 33.0	5 9 16.04	1.141	22 43 26.5	1.77
17	5 9 37.35	1.166	22 43 59.4	1.78	17 5 29.5	5 9 43.76	1.169	22 44 9.2	1.79
18	5 10 5.65	1.194	22 44 42.5	1.80	18 5 26.0	5 10 12.15	1.197	22 44 52.3	1.81
19	5 10 34.63	1.222	22 45 26.1	1.82	19 5 22.6	5 10 41.21	1.225	22 45 35.9	1.83
20	5 11 4.27	1.249	22 46 10.1	1.84	20 5 19.2	5 11 10.93	1.252	22 46 19.8	1.84
21	5 11 34.56	1.276	22 46 54.4	1.85	21 5 15.8	5 11 41.29	1.279	22 47 4.1	1.85
22	5 12 5.50	1.303	22 47 39.0	1.87	22 5 12.4	5 12 12.30	1.305	22 47 48.7	1.86
23	5 12 37.08	1.329	22 48 23.9	1.88	23 5 9.0	5 12 43.94	1.331	22 48 33.5	1.87
24	5 13 9.28	1.355	22 49 9.1	1.89	24 5 5.6	5 13 16.20	1.357	22 49 18.6	1.88
25	5 13 42.10	1.380	22 49 54.5	1.90	25 5 2.2	5 13 49.07	1.382	22 50 4.0	1.89
26	5 14 15.54	1.405	22 50 40.1	1.90	26 4 58.8	5 14 22.55	1.407	22 50 49.6	1.90
27	5 14 49.57	1.430	22 51 25.8	1.91	27 4 55.4	5 14 56.62	1.432	22 51 35.2	1.90
28	5 15 24.19	1.455	22 52 11.6	1.91	28 4 52.0	5 15 31.28	1.456	22 52 20.9	1.91
29	5 15 59.40	1.479	22 52 57.5	1.92	29 4 48.6	5 16 6.52	1.480	22 53 6.7	1.91
30	5 16 35.18	1.503	22 53 43.5	1.92	30 4 45.3	5 16 42.33	1.504	22 53 52.6	1.91
31	5 17 11.52	1.526	22 54 29.5	1.92	31 4 42.0	5 17 18.70	1.527	22 54 38.5	1.91
Apr. 1	5 17 48.43	1.549	22 55 15.5	1.92	1 4 38.7	5 17 55.63	1.550	22 55 24.4	1.91
2	5 18 25.89	1.572	22 56 1.4	1.91	2 4 35.4	5 18 33.10	1.573	22 56 10.2	1.91
3	5 19 3.88	1.594	22 56 47.1	1.91	3 4 32.1	5 19 11.11	1.595	22 56 55.8	1.90
4	5 19 42.41	1.616	22 57 32.8	1.90	4 4 28.8	5 19 49.65	1.617	22 57 41.3	1.90
5	5 20 21.47	1.638	22 58 18.3	1.90	5 4 25.5	5 20 28.72	1.638	22 58 26.7	1.89
6	5 21 1.04	1.659	22 59 3.6	1.89	6 4 22.2	5 21 8.29	1.659	22 59 11.9	1.88
7	5 21 41.12	1.680	22 59 48.7	1.88	7 4 18.9	5 21 48.37	1.680	22 59 56.8	1.87
8	5 22 21.71	1.701	23 0 33.6	1.87	8 4 15.6	5 22 28.96	1.701	23 0 41.5	1.86
9	5 23 2.80	1.722	23 1 18.2	1.86	9 4 12.4	5 23 10.04	1.722	23 1 26.0	1.85
10	5 23 44.37	1.742	23 2 2.5	1.85	10 4 9.2	5 23 51.60	1.742	23 2 10.1	1.84
11	5 24 26.42	1.762	23 2 46.4	1.83	11 4 5.9	5 24 33.64	1.762	23 2 53.9	1.83
12	5 25 8.95	1.782	23 3 30.0	1.81	12 4 2.7	5 25 16.16	1.781	23 3 37.3	1.81
13	5 25 51.95	1.801	23 4 13.2	1.80	13 3 59.5	5 25 59.14	1.801	23 4 20.4	1.79
14	5 26 35.41	1.820	23 4 56.0	1.78	14 3 56.3	5 26 42.58	1.820	23 5 3.0	1.77
15	5 27 19.33	1.839	23 5 38.3	1.76	15 3 53.1	5 27 26.48	1.839	23 5 45.1	1.75
16	5 28 3.69	1.858	23 6 20.2	1.74	16 3 49.9	5 28 10.82	1.857	23 6 26.8	1.73
17	5 28 48.50	1.876	23 7 1.6	1.72	17 3 46.7	5 28 55.60	1.875	23 7 8.1	1.71
18	5 29 33.74	1.894	23 7 42.5	1.70	18 3 43.5	5 29 40.81	1.893	23 7 48.8	1.69
19	5 30 19.41	1.912	23 8 22.9	1.67	19 3 40.3	5 30 26.44	1.910	23 8 28.9	1.67
20	5 31 5.50	1.929	23 9 2.6	1.65	20 3 37.2	5 31 12.49	1.927	23 9 8.5	1.64
21	5 31 52.00	1.946	23 9 41.7	1.62	21 3 34.0	5 31 58.95	1.944	23 9 47.5	1.61
22	5 32 38.90	1.962	23 10 20.2	1.59	22 3 30.8	5 32 45.81	1.960	23 10 25.8	1.59
23	5 33 26.19	1.978	23 10 58.0	1.56	23 3 27.7	5 33 33.05	1.976	23 11 3.4	1.56
24	5 34 13.87	1.994	23 11 35.1	1.53	24 3 24.6	5 34 20.68	1.992	23 11 40.3	1.53
25	5 35 1.93	2.010	23 12 11.5	1.50	25 3 21.5	5 35 8.69	2.008	23 12 16.6	1.50
26	5 35 50.36	2.025	23 12 47.2	1.47	26 3 18.3	5 35 57.07	2.023	23 12 52.1	1.47
27	5 36 39.15	2.040	23 13 22.0	1.44	27 3 15.2	5 36 45.80	2.038	23 13 26.7	1.44
28	5 37 28.30	2.055	23 13 56.1	1.40	28 3 12.1	5 37 34.89	2.052	23 14 0.6	1.40
29	5 38 17.79	2.069	23 14 29.3	1.37	29 3 9.0	5 38 24.32	2.066	23 14 33.7	1.36
30	5 39 7.62	2.083	23 15 1.7	1.33	30 3 5.9	5 39 14.08	2.080	23 15 5.9	1.32
31	5 39 57.78	+2.097	+23 15 33.2	+1.29	31 3 2.8	5 40 4.17	+2.094	+23 15 37.2	+1.29

JUPITER, 1871.

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	5 39 57.78	+2.097	+23 15 33.2	+1.29	1 3 2.8	5 40 4.17	+2.094	+23 15 37.2	+1.29
2	5 40 48.27	2.110	23 16 3.8	1.26	2 2 59.7	5 40 54.59	2.107	23 16 7.6	1.25
3	5 41 39.08	2.123	23 16 33.5	1.22	3 2 56.6	5 41 45.33	2.120	23 16 37.1	1.21
4	5 42 30.20	2.136	23 17 2.2	1.18	4 2 53.5	5 42 36.38	2.133	23 17 5.6	1.17
5	5 43 21.63	2.149	23 17 30.0	1.14	5 2 50.4	5 43 27.74	2.146	23 17 33.3	1.13
6	5 44 13.36	2.161	23 17 56.8	1.10	6 2 47.4	5 44 19.39	2.158	23 17 59.9	1.09
7	5 45 5.39	2.173	23 18 22.6	1.06	7 2 44.3	5 45 11.34	2.170	23 18 25.5	1.05
8	5 45 57.70	2.185	23 18 47.4	1.02	8 2 41.3	5 46 3.57	2.182	23 18 50.1	1.01
9	5 46 50.30	2.197	23 19 11.2	0.97	9 2 38.2	5 46 56.09	2.194	23 19 13.7	0.97
10	5 47 43.18	2.209	23 19 33.9	0.93	10 2 35.1	5 47 48.89	2.205	23 19 36.3	0.93
11	5 48 36.33	2.220	23 19 55.6	0.89	11 2 32.1	5 48 41.96	2.216	23 19 57.8	0.88
12	5 49 29.75	2.231	23 20 16.2	0.84	12 2 29.0	5 49 35.30	2.227	23 20 18.2	0.83
13	5 50 23.43	2.242	23 20 35.6	0.79	13 2 26.0	5 50 28.89	2.238	23 20 37.5	0.79
14	5 51 17.36	2.253	23 20 53.9	0.75	14 2 23.0	5 51 22.73	2.248	23 20 55.7	0.74
15	5 52 11.54	2.263	23 21 11.1	0.70	15 2 20.0	5 52 16.82	2.258	23 21 12.7	0.69
16	5 53 5.97	2.273	23 21 27.1	0.65	16 2 17.0	5 53 11.16	2.268	23 21 28.6	0.64
17	5 54 0.63	2.283	23 21 44.0	0.60	17 2 14.0	5 54 5.73	2.278	23 21 43.3	0.59
18	5 54 55.52	2.292	23 21 55.7	0.55	18 2 11.0	5 55 0.52	2.287	23 21 56.9	0.54
19	5 55 50.64	2.301	23 22 8.2	0.50	19 2 8.0	5 55 55.54	2.296	23 22 9.3	0.49
20	5 56 45.97	2.310	23 22 19.5	0.45	20 2 5.0	5 56 50.78	2.305	23 22 20.4	0.44
21	5 57 41.51	2.319	23 22 29.5	0.39	21 2 1.9	5 57 46.22	2.314	23 22 30.3	0.39
22	5 58 37.25	2.327	23 22 38.2	0.34	22 1 58.9	5 58 41.86	2.322	23 22 38.9	0.34
23	5 59 33.19	2.335	23 22 45.7	0.29	23 1 55.9	5 59 37.70	2.330	23 22 46.2	0.29
24	6 0 29.31	2.343	23 22 51.9	0.24	24 1 52.9	6 0 33.72	2.338	23 22 52.3	0.23
25	6 1 25.61	2.350	23 22 56.9	0.18	25 1 49.9	6 1 29.92	2.345	23 22 57.2	0.18
26	6 2 22.09	2.357	23 23 0.6	0.13	26 1 46.9	6 2 26.29	2.352	23 23 0.8	0.12
27	6 3 18.74	2.364	23 23 3.0	0.08	27 1 43.9	6 3 22.83	2.359	23 23 3.1	0.07
28	6 4 15.55	2.371	23 23 4.1	+0.02	28 1 41.0	6 4 19.54	2.366	23 23 4.1	+0.01
29	6 5 12.52	2.377	23 23 3.7	−0.04	29 1 38.0	6 5 16.40	2.372	23 23 3.7	−0.05
30	6 6 9.64	2.383	23 23 2.1	0.09	30 1 35.0	6 6 13.41	2.378	23 23 1.9	0.10
31	6 7 6.91	2.389	23 22 59.1	0.15	31 1 32.0	6 7 10.57	2.384	23 22 58.8	0.16
June 1	6 8 4.32	2.395	23 22 54.8	0.21	1 1 29.0	6 8 7.87	2.390	23 22 54.4	0.21
2	6 9 1.86	2.400	23 22 49.1	0.27	2 1 26.0	6 9 5.30	2.396	23 22 48.6	0.27
3	6 9 59.53	2.406	23 22 42.0	0.32	3 1 23.1	6 10 2.86	2.401	23 22 41.5	0.32
4	6 10 57.33	2.411	23 22 33.5	0.37	4 1 20.1	6 11 0.55	2.406	23 22 32.9	0.38
5	6 11 55.25	2.416	23 22 23.6	0.43	5 1 17.1	6 11 58.36	2.411	23 22 23.0	0.44
6	6 12 53.28	2.420	23 22 12.4	0.49	6 1 14.1	6 12 56.28	2.415	23 22 11.7	0.49
7	6 13 51.41	2.425	23 21 59.8	0.55	7 1 11.2	6 13 54.30	2.420	23 21 59.1	0.55
8	6 14 49.65	2.429	23 21 45.8	0.61	8 1 8.2	6 14 52.42	2.424	23 21 45.1	0.61
9	6 15 48.00	2.434	23 21 30.4	0.67	9 1 5.2	6 15 50.65	2.428	23 21 29.6	0.67
10	6 16 46.45	2.438	23 21 13.6	0.73	10 1 2.3	6 16 48.98	2.432	23 21 12.8	0.73
11	6 17 45.00	2.442	23 20 55.4	0.79	11 0 59.3	6 17 47.41	2.436	23 20 54.6	0.79
12	6 18 43.63	2.445	23 20 35.8	0.85	12 0 56.4	6 18 45.93	2.440	23 20 35.0	0.85
13	6 19 42.34	2.448	23 20 14.8	0.91	13 0 53.4	6 19 44.52	2.443	23 20 14.0	0.91
14	6 20 41.12	2.451	23 19 52.3	0.97	14 0 50.5	6 20 43.18	2.446	23 19 51.5	0.96
15	6 21 39.97	2.454	23 19 28.4	1.02	15 0 47.5	6 21 41.91	2.449	23 19 27.6	1.02
16	6 22 38.89	2.456	23 19 3.1	1.08	16 0 44.5	6 22 40.71	2.451	23 19 2.3	1.08
17	6 23 37.86	2.458	23 18 36.4	1.14	17 0 41.6	6 23 39.56	2.453	23 18 35.6	1.14
18	6 24 36.88	2.460	23 18 8.3	1.20	18 0 38.6	6 24 38.46	2.455	23 18 7.5	1.20
19	6 25 35.94	2.462	23 17 38.7	1.26	19 0 35.7	6 25 37.40	2.457	23 17 38.0	1.26
20	6 26 35.04	2.463	23 17 7.7	1.32	20 0 32.7	6 26 36.38	2.459	23 17 7.0	1.32
21	6 27 34.17	2.464	23 16 35.3	1.38	21 0 29.7	6 27 35.39	2.460	23 16 34.6	1.38
22	6 28 33.33	2.465	23 16 1.4	1.44	22 0 26.8	6 28 34.43	2.461	23 16 0.7	1.43
23	6 29 32.52	2.466	23 15 26.2	1.49	23 0 23.8	6 29 33.50	2.461	23 15 25.5	1.49
24	6 30 31.72	2.466	23 14 49.5	1.55	24 0 20.9	6 30 32.58	2.462	23 14 48.9	1.55
25	6 31 30.93	2.467	23 14 11.4	1.61	25 0 17.9	6 31 31.67	2.462	23 14 10.9	1.61
26	6 32 30.13	2.467	23 13 31.9	1.67	26 0 15.0	6 32 30.75	2.462	23 13 31.5	1.67
27	6 33 29.34	2.467	23 12 51.1	1.73	27 0 12.0	6 33 29.83	2.462	23 12 50.8	1.73
28	6 34 28.54	2.467	23 12 8.9	1.79	28 0 9.1	6 34 28.91	2.461	23 12 8.6	1.79
29	6 35 27.73	2.466	23 11 25.3	1.85	29 0 6.1	6 35 27.98	2.461	23 11 25.0	1.85
30	6 36 26.91	2.465	23 10 40.1	1.91	30 0 3.2	6 36 27.04	2.460	23 10 40.0	1.90
31	6 37 26.07	+2.464	+23 9 53.7	−1.96	31 0 0.3	6 37 26.08	+2.459	+23 9 53.7	−1.96

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	6 37 26.07	+2.464	+23 9 53.7	−1.96	1 23 57.3	6 38 25.09	+2.458	+23 9 6.0	−2.02
2	6 38 25.20	2.463	23 9 5.9	2.02	2 23 54.3	6 39 24.07	2.457	23 8 16.9	2.07
3	6 39 24.30	2.462	23 8 16.7	2.08	3 23 51.4	6 40 23.02	2.456	23 7 26.5	2.13
4	6 40 23.37	2.461	23 7 26.2	2.14	4 23 48.4	6 41 21.93	2.454	23 6 34.8	2.18
5	6 41 22.40	2.459	23 6 34.4	2.19	5 23 45.5	6 42 20.80	2.452	23 5 41.7	2.24
6	6 42 21.39	2.457	23 5 41.2	2.25	6 23 42.5	6 43 19.62	2.450	23 4 47.3	2.29
7	6 43 20.33	2.455	23 4 46.7	2.31	7 23 39.5	6 44 18.40	2.448	23 3 51.6	2.35
8	6 44 19.23	2.453	23 3 50.9	2.36	8 23 36.6	6 45 17.12	2.445	23 2 54.6	2.40
9	6 45 18.07	2.450	23 2 53.7	2.41	9 23 33.6	6 46 15.78	2.442	23 1 56.2	2.46
10	6 46 16.85	2.447	23 1 55.2	2.47	10 23 30.7	6 47 14.37	2.439	23 0 56.6	2.52
11	6 47 15.56	2.444	23 0 55.4	2.52	11 23 27.7	6 48 12.88	2.436	22 59 55.7	2.57
12	6 48 14.19	2.441	22 59 54.4	2.57	12 23 24.7	6 49 11.32	2.433	22 58 53.5	2.62
13	6 49 12.75	2.438	22 58 52.1	2.62	13 23 21.8	6 50 9.68	2.429	22 57 50.1	2.67
14	6 50 11.23	2.435	22 57 48.5	2.68	14 23 18.8	6 51 7.95	2.425	22 56 45.5	2.72
15	6 51 9.62	2.431	22 56 43.7	2.73	15 23 15.9	6 52 6.12	2.421	22 55 39.7	2.77
16	6 52 7.91	2.427	22 55 37.7	2.78	16 23 12.9	6 53 4.19	2.417	22 54 32.7	2.82
17	6 53 6.10	2.423	22 54 30.5	2.83	17 23 9.9	6 54 2.16	2.413	22 53 24.5	2.87
18	6 54 4.18	2.418	22 53 22.1	2.88	18 23 7.0	6 55 0.02	2.408	22 52 15.1	2.92
19	6 55 2.15	2.413	22 52 12.5	2.93	19 23 4.0	6 55 57.76	2.403	22 51 4.5	2.97
20	6 56 0.01	2.408	22 51 1.7	2.98	20 23 1.0	6 56 55.37	2.398	22 49 52.7	3.01
21	6 56 57.73	2.403	22 49 49.7	3.02	21 22 58.0	6 57 52.85	2.392	22 48 39.8	3.06
22	6 57 55.32	2.397	22 48 36.6	3.07	22 22 55.0	6 58 50.19	2.386	22 47 25.8	3.11
23	6 58 52.78	2.391	22 47 22.4	3.12	23 22 52.1	6 59 47.39	2.380	22 46 10.7	3.16
24	6 59 50.09	2.386	22 46 7.1	3.16	24 22 49.1	7 0 44.45	2.374	22 44 54.5	3.20
25	7 0 47.26	2.379	22 44 50.7	3.20	25 22 46.1	7 1 41.36	2.367	22 43 37.2	3.24
26	7 1 44.28	2.373	22 43 33.2	3.25	26 22 43.1	7 2 38.11	2.360	22 42 18.9	3.28
27	7 2 41.14	2.367	22 42 14.7	3.30	27 22 40.1	7 3 34.71	2.353	22 40 59.6	3.32
28	7 3 37.84	2.360	22 40 55.2	3.34	28 22 37.2	7 4 31.14	2.346	22 39 39.4	3.36
29	7 4 34.38	2.353	22 39 34.7	3.38	29 22 34.2	7 5 27.40	2.339	22 38 18.1	3.40
30	7 5 30.75	2.346	22 38 13.2	3.42	30 22 31.2	7 6 23.48	2.332	22 36 55.8	3.44
31	7 6 26.94	2.338	22 36 50.7	3.46	31 22 28.2	7 7 19.38	2.325	22 35 32.6	3.48
Aug. 1	7 7 22.94	2.330	22 35 27.3	3.50	1 22 25.2	7 8 15.10	2.318	22 34 8.6	3.52
2	7 8 18.77	2.322	22 34 3.0	3.53	2 22 22.1	7 9 10.63	2.310	22 32 43.6	3.56
3	7 9 14.41	2.314	22 32 37.8	3.57	3 22 19.1	7 10 5.97	2.302	22 31 17.7	3.60
4	7 10 9.86	2.306	22 31 11.7	3.61	4 22 16.1	7 11 1.12	2.294	22 29 50.9	3.63
5	7 11 5.10	2.298	22 29 44.7	3.65	5 22 13.1	7 11 56.07	2.285	22 28 23.4	3.66
6	7 12 0.15	2.290	22 28 16.9	3.68	6 22 10.1	7 12 50.81	2.276	22 26 55.0	3.70
7	7 12 54.99	2.281	22 26 48.3	3.72	7 22 7.0	7 13 45.33	2.267	22 25 25.9	3.73
8	7 13 49.61	2.272	22 25 18.9	3.75	8 22 4.0	7 14 39.63	2.258	22 23 56.0	3.76
9	7 14 44.01	2.262	22 23 48.7	3.78	9 22 1.0	7 15 33.71	2.249	22 22 25.3	3.79
10	7 15 38.18	2.253	22 22 17.8	3.81	10 21 58.0	7 16 27.56	2.239	22 20 53.9	3.82
11	7 16 32.12	2.243	22 20 46.2	3.85	11 21 54.9	7 17 21.17	2.229	22 19 21.8	3.85
12	7 17 25.82	2.233	22 19 13.9	3.88	12 21 51.9	7 18 14.53	2.218	22 17 49.1	3.88
13	7 18 19.27	2.222	22 17 40.9	3.90	13 21 48.8	7 19 7.64	2.207	22 16 15.8	3.90
14	7 19 12.47	2.212	22 16 7.3	3.92	14 21 45.8	7 20 0.49	2.196	22 14 41.8	3.93
15	7 20 5.41	2.201	22 14 33.1	3.94	15 21 42.7	7 20 53.08	2.185	22 13 7.3	3.95
16	7 20 58.09	2.190	22 12 58.3	3.96	16 21 39.7	7 21 45.41	2.174	22 11 32.2	3.97
17	7 21 50.51	2.179	22 11 22.9	3.98	17 21 36.6	7 22 37.46	2.163	22 9 56.6	3.99
18	7 22 42.64	2.167	22 9 47.1	4.00	18 21 33.5	7 23 29.23	2.151	22 8 20.5	4.01
19	7 23 34.49	2.155	22 8 10.8	4.02	19 21 30.4	7 24 20.71	2.139	22 6 44.0	4.03
20	7 24 26.05	2.142	22 6 34.0	4.04	20 21 27.3	7 25 11.88	2.127	22 5 7.0	4.05
21	7 25 17.30	2.129	22 4 56.8	4.06	21 21 24.2	7 26 2.77	2.114	22 3 29.7	4.06
22	7 26 8.26	2.117	22 3 19.2	4.07	22 21 21.1	7 26 53.34	2.101	22 1 52.0	4.08
23	7 26 58.91	2.104	22 1 41.3	4.09	23 21 18.0	7 27 43.60	2.088	22 0 14.0	4.10
24	7 27 49.25	2.091	22 0 3.0	4.10	24 21 14.9	7 28 33.55	2.075	21 58 35.7	4.11
25	7 28 39.27	2.077	21 58 24.4	4.11	25 21 11.8	7 29 23.18	2.061	21 56 57.1	4.12
26	7 29 28.97	2.064	21 56 45.6	4.12	26 21 8.7	7 30 12.48	2.047	21 55 18.3	4.13
27	7 30 18.34	2.050	21 55 6.5	4.13	27 21 5.6	7 31 1.45	2.033	21 53 39.2	4.13
28	7 31 7.37	2.036	21 53 27.2	4.14	28 21 2.5	7 31 50.98	2.019	21 52 0.0	4.14
29	7 31 56.06	2.022	21 51 47.7	4.15	29 20 59.3	7 32 38.37	2.005	21 50 20.7	4.14
30	7 32 44.41	2.008	21 50 8.1	4.15	30 20 56.2	7 33 26.31	1.990	21 48 41.2	4.15
31	7 33 32.41	+1.993	+21 48 28.4	−4.16	31 20 53.0	7 34 13.89	+1.975	+21 47 1.6	−4.15

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	7 34 20.05	+1.978	+21 46 48.6	-4.16	1 20 49.9	7 35 1.12	+1.960	+21 45 22.0	-4.15
2	7 35 7.34	1.963	21 45 8.8	4.16	2 20 46.8	7 35 47.98	1.945	21 43 42.4	4.15
3	7 35 54.25	1.948	21 43 29.0	4.16	3 20 43.7	7 36 34.47	1.929	21 42 2.9	4.14
4	7 36 40.79	1.932	21 41 49.3	4.15	4 20 40.5	7 37 20.58	1.913	21 40 23.5	4.14
5	7 37 26.95	1.916	21 40 9.7	4.15	5 20 37.3	7 38 6.31	1.897	21 38 44.1	4.14
6	7 38 12.73	1.899	21 38 30.1	4.14	6 20 34.1	7 38 51.65	1.881	21 37 4.9	4.13
7	7 38 58.11	1.882	21 36 50.7	4.14	7 20 30.9	7 39 36.59	1.864	21 35 25.9	4.12
8	7 39 43.09	1.865	21 35 11.5	4.13	8 20 27.7	7 40 21.12	1.847	21 33 47.1	4.11
9	7 40 27.66	1.848	21 33 32.5	4.12	9 20 24.5	7 41 5.23	1.829	21 32 8.5	4.10
10	7 41 11.81	1.831	21 31 53.7	4.11	10 20 21.3	7 41 48.93	1.811	21 30 30.2	4.09
11	7 41 55.54	1.813	21 30 15.2	4.10	11 20 18.1	7 42 32.20	1.793	21 28 52.2	4.08
12	7 42 38.84	1.795	21 28 37.1	4.09	12 20 14.9	7 43 15.03	1.775	21 27 14.6	4.06
13	7 43 21.70	1.777	21 26 59.4	4.07	13 20 11.7	7 43 57.41	1.756	21 25 37.5	4.04
14	7 44 4.10	1.758	21 25 22.1	4.05	14 20 8.5	7 44 39.35	1.737	21 24 0.9	4.02
15	7 44 46.06	1.739	21 23 45.3	4.03	15 20 5.2	7 45 20.83	1.718	21 22 24.7	4.00
16	7 45 27.56	1.720	21 22 9.0	4.00	16 20 2.0	7 46 1.85	1.699	21 20 49.0	3.98
17	7 46 8.59	1.700	21 20 33.2	3.97	17 19 58.8	7 46 42.39	1.679	21 19 13.9	3.95
18	7 46 49.14	1.680	21 18 58.0	3.95	18 19 55.5	7 47 22.45	1.659	21 17 39.4	3.92
19	7 47 29.21	1.660	21 17 23.4	3.92	19 19 52.2	7 48 2.02	1.639	21 16 5.6	3.89
20	7 48 8.79	1.640	21 15 49.5	3.89	20 19 48.9	7 48 41.11	1.618	21 14 32.5	3.86
21	7 48 47.88	1.619	21 14 16.3	3.86	21 19 45.6	7 49 19.70	1.597	21 13 0.1	3.83
22	7 49 26.47	1.598	21 12 43.8	3.83	22 19 42.3	7 49 57.78	1.576	21 11 28.4	3.80
23	7 50 4.55	1.577	21 11 12.1	3.80	23 19 39.0	7 50 35.36	1.555	21 9 57.6	3.76
24	7 50 42.12	1.555	21 9 41.3	3.77	24 19 35.7	7 51 12.42	1.533	21 8 27.7	3.72
25	7 51 19.17	1.533	21 8 11.4	3.73	25 19 32.3	7 51 48.95	1.511	21 6 58.8	3.68
26	7 51 55.70	1.511	21 6 42.4	3.69	26 19 29.0	7 52 24.96	1.489	21 5 30.9	3.64
27	7 52 31.69	1.489	21 5 14.4	3.65	27 19 25.7	7 53 0.44	1.467	21 4 3.9	3.60
28	7 53 7.15	1.466	21 3 47.4	3.61	28 19 22.4	7 53 35.38	1.444	21 2 37.9	3.56
29	7 53 42.06	1.443	21 2 21.4	3.56	29 19 19.0	7 54 9.77	1.421	21 1 12.9	3.52
30	7 54 16.42	1.420	21 0 56.4	3.52	30 19 15.6	7 54 43.60	1.398	20 59 49.0	3.47
Oct. 1	7 54 50.22	1.397	20 59 32.6	3.47	1 19 12.2	7 55 16.87	1.374	20 58 26.3	3.42
2	7 55 23.46	1.373	20 58 9.9	3.42	2 19 8.8	7 55 49.57	1.350	20 57 4.9	3.37
3	7 55 56.12	1.349	20 56 48.5	3.37	3 19 5.4	7 56 21.69	1.326	20 55 44.7	3.32
4	7 56 28.20	1.325	20 55 28.3	3.32	4 19 2.0	7 56 53.23	1.302	20 54 25.7	3.27
5	7 56 59.69	1.300	20 54 9.4	3.27	5 18 58.6	7 57 24.18	1.277	20 53 8.0	3.21
6	7 57 30.59	1.275	20 52 51.8	3.21	6 18 55.2	7 57 54.53	1.252	20 51 51.7	3.15
7	7 58 0.89	1.250	20 51 35.6	3.15	7 18 51.8	7 58 24.27	1.226	20 50 36.9	3.09
8	7 58 30.57	1.224	20 50 20.9	3.09	8 18 48.3	7 58 53.40	1.200	20 49 23.5	3.03
9	7 58 59.63	1.198	20 49 7.6	3.03	9 18 44.8	7 59 21.90	1.174	20 48 11.5	2.97
10	7 59 28.06	1.172	20 47 55.8	2.97	10 18 41.3	7 59 49.77	1.148	20 47 1.0	2.90
11	7 59 55.86	1.145	20 46 45.5	2.90	11 18 37.8	8 0 17.00	1.121	20 45 52.1	2.84
12	8 0 23.01	1.118	20 45 36.8	2.83	12 18 34.3	8 0 43.58	1.094	20 44 44.9	2.77
13	8 0 49.51	1.091	20 44 29.8	2.76	13 18 30.8	8 1 9.51	1.067	20 43 39.3	2.70
14	8 1 15.35	1.063	20 43 24.4	2.69	14 18 27.3	8 1 34.77	1.039	20 42 35.4	2.63
15	8 1 40.52	1.035	20 42 20.7	2.62	15 18 23.8	8 1 59.36	1.011	20 41 33.2	2.56
16	8 2 5.01	1.007	20 41 18.8	2.55	16 18 20.3	8 2 23.27	0.983	20 40 32.9	2.48
17	8 2 28.82	0.978	20 40 18.8	2.47	17 18 16.8	8 2 46.50	0.954	20 39 34.4	2.40
18	8 2 51.94	0.949	20 39 20.6	2.39	18 18 13.2	8 3 9.04	0.925	20 38 37.7	2.32
19	8 3 14.37	0.920	20 38 24.2	2.31	19 18 9.6	8 3 30.88	0.896	20 37 42.9	2.24
20	8 3 36.09	0.891	20 37 29.8	2.23	20 18 6.0	8 3 52.02	0.867	20 36 50.1	2.16
21	8 3 57.11	0.862	20 36 37.3	2.15	21 18 2.4	8 4 12.45	0.837	20 35 59.2	2.08
22	8 4 17.42	0.832	20 35 46.8	2.07	22 17 58.8	8 4 32.17	0.807	20 35 10.3	1.99
23	8 4 37.01	0.802	20 34 58.3	1.98	23 17 55.2	8 4 51.17	0.777	20 34 23.5	1.91
24	8 4 55.88	0.772	20 34 11.9	1.90	24 17 51.6	8 5 9.46	0.747	20 33 38.8	1.83
25	8 5 14.03	0.741	20 33 27.6	1.81	25 17 47.9	8 5 27.02	0.717	20 32 56.2	1.74
26	8 5 31.44	0.710	20 32 45.4	1.72	26 17 44.3	8 5 43.84	0.686	20 32 15.6	1.65
27	8 5 48.11	0.679	20 32 5.3	1.63	27 17 40.7	8 5 59.93	0.655	20 31 37.1	1.56
28	8 6 4.04	0.648	20 31 27.3	1.54	28 17 37.0	8 6 15.28	0.624	20 31 0.9	1.47
29	8 6 19.23	0.617	20 30 51.6	1.44	29 17 33.3	8 6 29.88	0.592	20 30 26.9	1.37
30	8 6 33.66	0.585	20 30 18.1	1.35	30 17 29.6	8 6 43.71	0.560	20 29 55.1	1.28
31	8 6 47.32	0.553	20 29 46.9	1.25	31 17 25.9	8 6 56.78	0.528	20 29 25.7	1.18
32	8 7 0.22	+0.521	+20 29 18.0	-1.16	32 17 22.2	8 7 9.08	+0.496	+20 28 58.6	-1.09

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	8 7 0.22	+0.521	+20 29 18.0	-1.16	1 17 22.2	8 7 9.08	+0.496	+20 28 58.6	-1.09
2	8 7 12.34	0.489	20 28 51.5	1.06	2 17 18.5	8 7 20.61	0.464	20 28 33.8	0.99
3	8 7 23.68	0.456	20 28 27.3	0.96	3 17 14.7	8 7 31.36	0.431	20 28 11.4	0.89
4	8 7 34.23	0.423	20 28 5.5	0.86	4 17 10.9	8 7 41.32	0.398	20 27 51.3	0.79
5	8 7 44.00	0.390	20 27 46.0	0.76	5 17 7.1	8 7 50.48	0.365	20 27 33.6	0.69
6	8 7 52.96	0.357	20 27 29.0	0.66	6 17 3.3	8 7 58.85	0.332	20 27 18.4	0.59
7	8 8 1.12	0.323	20 27 14.5	0.56	7 16 59.5	8 8 6.41	0.298	20 27 5.6	0.49
8	8 8 8.47	0.289	20 27 2.4	0.45	8 16 55.7	8 8 13.15	0.264	20 26 55.3	0.38
9	8 8 14.99	0.255	20 26 52.9	0.35	9 16 51.9	8 8 19.09	0.230	20 26 47.6	0.28
10	8 8 20.71	0.221	20 26 45.8	0.24	10 16 48.0	8 8 24.22	0.196	20 26 42.4	0.17
11	8 8 25.61	0.187	20 26 41.3	0.14	11 16 44.1	8 8 28.53	0.162	20 26 39.6	-0.07
12	8 8 29.69	0.153	20 26 39.3	-0.03	12 16 40.2	8 8 32.02	0.128	20 26 39.3	+0.04
13	8 8 32.93	0.118	20 26 39.8	+0.08	13 16 36.3	8 8 34.69	0.094	20 26 41.6	0.15
14	8 8 35.35	0.084	20 26 42.8	0.18	14 16 32.4	8 8 36.53	0.060	20 26 46.4	0.26
15	8 8 36.94	0.049	20 26 48.4	0.29	15 16 28.5	8 8 37.54	+0.025	20 26 53.8	0.37
16	8 8 37.69	+0.015	20 26 56.6	0.39	16 16 24.6	8 8 37.72	-0.009	20 27 3.7	0.47
17	8 8 37.60	-0.020	20 27 7.4	0.50	17 16 20.7	8 8 37.07	0.044	20 27 16.2	0.58
18	8 8 36.69	0.055	20 27 20.8	0.60	18 16 16.7	8 8 35.60	0.079	20 27 31.3	0.69
19	8 8 34.95	0.089	20 27 36.7	0.71	19 16 12.7	8 8 33.31	0.113	20 27 48.9	0.79
20	8 8 32.38	0.124	20 27 55.2	0.82	20 16 8.7	8 8 30.19	0.147	20 28 9.1	0.89
21	8 8 28.98	0.158	20 28 16.3	0.92	21 16 4.7	8 8 26.25	0.182	20 28 31.8	1.00
22	8 8 24.75	0.193	20 28 39.9	1.03	22 16 0.7	8 8 21.48	0.216	20 28 57.1	1.10
23	8 8 19.70	0.227	20 29 6.1	1.14	23 15 56.6	8 8 15.89	0.250	20 29 25.0	1.21
24	8 8 13.82	0.262	20 29 34.9	1.25	24 15 52.6	8 8 9.48	0.284	20 29 55.4	1.31
25	8 8 7.11	0.296	20 30 6.2	1.36	25 15 48.6	8 8 2.25	0.318	20 30 28.3	1.42
26	8 7 59.58	0.331	20 30 40.0	1.46	26 15 44.6	8 7 54.21	0.352	20 31 3.6	1.52
27	8 7 51.23	0.365	20 31 16.3	1.56	27 15 40.5	8 7 45.35	0.386	20 31 41.3	1.62
28	8 7 42.07	0.399	20 31 55.0	1.66	28 15 36.4	8 7 35.68	0.420	20 32 21.5	1.72
29	8 7 32.09	0.433	20 32 36.2	1.76	29 15 32.3	8 7 25.20	0.454	20 33 4.1	1.82
30	8 7 21.30	0.467	20 33 19.7	1.86	30 15 28.2	8 7 13.92	0.487	20 33 49.1	1.92
Dec. 1	8 7 9.70	0.500	20 34 5.6	1.95	1 15 24.1	8 7 1.84	0.520	20 34 36.4	2.02
2	8 6 57.30	0.534	20 34 53.9	2.05	2 15 20.0	8 6 48.96	0.553	20 35 26.0	2.11
3	8 6 44.10	0.567	20 35 44.4	2.15	3 15 15.8	8 6 35.29	0.586	20 36 17.8	2.21
4	8 6 30.10	0.600	20 36 37.3	2.25	4 15 11.6	8 6 20.83	0.619	20 37 11.9	2.31
5	8 6 15.32	0.632	20 37 32.4	2.35	5 15 7.4	8 6 5.60	0.651	20 38 8.2	2.40
6	8 5 59.76	0.665	20 38 29.7	2.44	6 15 3.2	8 5 49.59	0.683	20 39 6.8	2.49
7	8 5 43.43	0.697	20 39 29.3	2.53	7 14 59.0	8 5 32.82	0.715	20 40 7.6	2.58
8	8 5 26.32	0.729	20 40 31.0	2.62	8 14 54.8	8 5 15.29	0.746	20 41 10.5	2.67
9	8 5 8.46	0.760	20 41 34.9	2.71	9 14 50.6	8 4 57.02	0.777	20 42 15.5	2.75
10	8 4 49.85	0.791	20 42 40.9	2.80	10 14 46.3	8 4 38.01	0.807	20 43 22.5	2.83
11	8 4 30.50	0.821	20 43 48.9	2.88	11 14 42.1	8 4 18.27	0.837	20 44 31.5	2.91
12	8 4 10.42	0.851	20 44 58.8	2.96	12 14 37.8	8 3 57.82	0.867	20 45 42.4	2.99
13	8 3 49.63	0.881	20 46 10.7	3.04	13 14 33.5	8 3 36.67	0.896	20 46 55.2	3.07
14	8 3 28.14	0.910	20 47 24.4	3.11	14 14 29.2	8 3 14.83	0.924	20 48 9.8	3.14
15	8 3 5.97	0.938	20 48 39.9	3.18	15 14 24.9	8 2 52.32	0.951	20 49 26.1	3.21
16	8 2 43.13	0.965	20 49 57.2	3.25	16 14 20.6	8 2 29.16	0.978	20 50 44.1	3.28
17	8 2 19.64	0.992	20 51 16.1	3.32	17 14 16.3	8 2 5.36	1.005	20 52 3.8	3.35
18	8 1 55.51	1.019	20 52 36.7	3.39	18 14 12.0	8 1 40.92	1.031	20 53 25.0	3.41
19	8 1 30.74	1.045	20 53 58.8	3.45	19 14 7.6	8 1 15.87	1.056	20 54 47.7	3.47
20	8 1 5.37	1.070	20 55 22.3	3.51	20 14 3.2	8 0 50.23	1.080	20 56 11.8	3.53
21	8 0 39.41	1.094	20 56 47.2	3.57	21 13 58.9	8 0 24.01	1.104	20 57 37.2	3.59
22	8 0 12.87	1.118	20 58 13.4	3.62	22 13 54.5	7 59 57.22	1.128	20 59 3.9	3.64
23	7 59 45.76	1.141	20 59 40.9	3.67	23 13 50.1	7 59 29.89	1.150	21 0 31.7	3.69
24	7 59 18.12	1.163	21 1 9.5	3.72	24 13 45.7	7 59 2.03	1.171	21 2 0.7	3.73
25	7 58 49.96	1.184	21 2 39.2	3.76	25 13 41.3	7 58 33.67	1.192	21 3 30.8	3.77
26	7 58 21.30	1.205	21 4 10.0	3.80	26 13 36.9	7 58 4.82	1.212	21 5 1.8	3.81
27	7 57 52.16	1.225	21 5 41.7	3.84	27 13 32.5	7 57 35.51	1.231	21 6 33.7	3.85
28	7 57 22.56	1.243	21 7 14.3	3.88	28 13 28.1	7 57 5.75	1.249	21 8 6.5	3.88
29	7 56 52.51	1.261	21 8 47.7	3.91	29 13 23.6	7 56 35.55	1.267	21 9 40.1	3.91
30	7 56 22.04	1.278	21 10 21.9	3.94	30 13 19.1	7 56 4.94	1.284	21 11 14.4	3.94
31	7 55 51.16	1.294	21 11 56.8	3.97	31 13 14.7	7 55 33.93	1.300	21 12 49.4	3.97
32	7 55 19.89	-1.310	+21 13 32.3	+4.00	32 13 10.2	7 55 2.55	-1.316	+21 14 25.0	+4.00

SATURN, 1871.

Date. 1871.	FOR WASHINGTON MEAN NOON. Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	FOR MERIDIAN TRANSIT. Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 0	18 8 32.14	+1.273	−22 36 52.1	+0.12	0 23 25.5	18 9 1.93	+1.268	−22 36 49.1	+0.14
1	18 9 2.66	1.271	22 36 49.0	0.14	1 23 22.1	18 9 32.34	1.266	22 36 45.6	0.15
2	18 9 33.14	1.269	22 36 45.5	0.15	2 23 18.6	18 10 2.69	1.263	22 36 41.7	0.17
3	18 10 3.56	1.266	22 36 41.6	0.17	3 23 15.2	18 10 32.97	1.260	22 36 37.4	0.19
4	18 10 33.92	1.263	22 36 37.3	0.19	4 23 11.8	18 11 3.19	1.257	22 36 32.7	0.21
5	18 11 4.20	1.260	22 36 32.5	0.21	5 23 8.4	18 11 33.33	1.254	22 36 27.5	0.23
6	18 11 34.41	1.257	22 36 27.2	0.23	6 23 4.9	18 12 3.39	1.251	22 36 21.8	0.25
7	18 12 4.54	1.254	22 36 21.5	0.25	7 23 1.5	18 12 33.37	1.248	22 36 15.7	0.26
8	18 12 34.59	1.250	22 36 15.4	0.26	8 22 58.1	18 13 3.27	1.244	22 36 9.3	0.28
9	18 13 4.56	1.247	22 36 9.0	0.28	9 22 54.6	18 13 33.09	1.241	22 36 2.5	0.29
10	18 13 34.45	1.244	22 36 2.2	0.29	10 22 51.2	18 14 2.83	1.238	22 35 55.3	0.31
11	18 14 4.26	1.240	22 35 55.0	0.31	11 22 47.7	18 14 32.49	1.234	22 35 47.7	0.32
12	18 14 33.98	1.236	22 35 47.4	0.33	12 22 44.3	18 15 2.04	1.229	22 35 39.8	0.34
13	18 15 3.59	1.231	22 35 39.4	0 34	13 22 40.8	18 15 31.47	1.224	22 35 31.5	0.35
14	18 15 33.09	1.227	22 35 31.1	0.35	14 22 37.4	18 16 0.78	1.219	22 35 22.9	0.37
15	18 16 2.47	1.221	22 35 22·4	0.37	15 22 34.0	18 16 29.97	1.214	22 35 13.9	0.38
16	18 16 31.72	1.216	22 35 13.3	0.39	16 22 30.5	18 16 59.03	1.208	22 35 4.5	0.40
17	18 17 0.84	1.211	22 35 3.9	0.40	17 22 27.1	18 17 27.97	1.203	22 34 54.7	0.41
18	18 17 29.84	1.206	22 34 54.1	0.41	18 22 23.6	18 17 56.78	1.198	22 34 44.6	0.43
19	18 17 58.71	1.200	22 34 44.0	0.43	19 22 20.2	18 18 25.45	1.192	22 34 34.2	0.44
20	18 18 27.44	1.194	22 34 33.6	0.44	20 22 16.7	18 18 53.98	1.186	22 34 23.5	0.45
21	18 18 56.03	1.188	22 34 22.8	0.46	21 22 13.2	18 19 22.36	1.179	22 34 12.5	0.46
22	18 19 24.47	1.182	22 34 11.7	0.47	22 22 9.8	18 19 50.59	1.173	22 34 1.2	0.48
23	18 19 52.75	1.175	22 34 0.3	0.48	23 22 6.3	18 20 18.66	1.166	22 33 49.5	0.49
24	18 20 20.87	1.168	22 33 48.6	0.49	24 22 2.8	18 20 46.56	1.159	22 33 37.5	0.50
25	18 20 48.82	1.161	22 33 36.6	0.51	25 21 59.4	18 21 14.28	1.151	22 33 25.3	0.51
26	18 21 16.60	1.154	22 33 24.3	0.52	26 21 55.9	18 21 41.83	1.144	22 33 12.8	0.53
27	18 21 44.20	1.146	22 33 11.8	0.53	27 21 52.4	18 22 9.20	1.137	22 33 0.1	0.54
28	18 22 11.62	1.139	22 32 59.0	0.54	28 21 48.9	18 22 36.39	1.129	22 32 47.1	0.55
29	18 22 38.86	1.131	22 32 46.0	0.55	29 21 45.4	18 23 3.39	1.121	22 32 33.9	0.56
30	18 23 5.91	1.123	22 32 32.7	0.56	30 21 42.0	18 23 30.19	1.113	22 32 20.4	0.57
31	18 23 32.76	1.115	22 32 19.1	0.57	31 21 38.5	18 23 56.80	1.104	22 32 6.7	0.58
Feb. 1	18 23 59.41	1.106	22 32 5.3	0.58	1 21 35.0	18 24 23.20	1.096	22 31 52.7	0.59
2	18 24 25.85	1.098	22 31 51.3	0.59	2 21 31.5	18 24 49.40	1.087	22 31 38.5	0.60
3	18 24 52.09	1.089	22 31 37.1	0.60	3 21 28.0	18 25 15.39	1.078	22 31 24.1	0.60
4	18 25 18.12	1.080	22 31 22.7	0.60	4 21 24.5	18 25 41.16	1.069	22 31 9.6	0.61
5	18 25 43.93	1.071	22 31 8.1	0.61	5 21 21.0	18 26 6.70	1.060	22 30 54.9	0.62
6	18 26 9.51	1.061	22 30 53.3	0.62	6 21 17.5	18 26 32.02	1.050	22 30 40.0	0.62
7	18 26 34.87	1.052	22 30 38.3	0.63	7 21 14.0	18 26 57.12	1.041	22 30 24.9	0.63
8	18 27 0.00	1.042	22 30 23.2	0.63	8 21 10.4	18 27 21.99	1.031	22 30 9.7	0.64
9	18 27 24.90	1.032	22 30 8.0	0.64	9 21 6.9	18 27 46.62	1.021	22 29 54.4	0.64
10	18 27 49.56	1.022	22 29 52.6	0.64	10 21 3.4	18 28 11.00	1.011	22 29 39.0	0.64
11	18 28 13.98	1.012	22 29 37.1	0.65	11 20 59.8	18 28 35.14	1.001	22 29 23.5	0.65
12	18 28 38.15	1.002	22 29 21.5	0.65	12 20 56.3	18 28 59.03	0.990	22 29 7.8	0.66
13	18 29 2.07	0.991	22 29 5.8	0.66	13 20 52.8	18 29 22.66	0.979	22 28 52.0	0.66
14	18 29 25.73	0.980	22 28 50.0	0.66	14 20 49.2	18 29 46.03	0.968	22 28 36.1	0.66
15	18 29 49.12	0.969	22 28 34.1	0.66	15 20 45.7	18 30 9.14	0.957	22 28 20.2	0.66
16	18 30 12.25	0.958	22 28 18.1	0.67	16 20 42.1	18 30 31.98	0.946	22 28 4.3	0.66
17	18 30 35.11	0.947	22 28 2.1	0.67	17 20 38.6	18 30 54.54	0.934	22 27 48.3	0.66
18	18 30 57.69	0.935	22 27 46.1	0.67	18 20 35.0	18 31 16.82	0.922	22 27 32.3	0.67
19	18 31 19.98	0.923	22 27 30.0	0.67	19 20 31.4	18 31 38.81	0.910	22 27 16.3	0.67
20	18 31 41.98	0.911	22 27 13.9	0.67	20 20 27.9	18 32 0.52	0.899	22 27 0.2	0.67
21	18 32 3.70	0.899	22 26 57.8	0.67	21 20 24.3	18 32 21.94	0.886	22 26 44.1	0.67
22	18 32 25.13	0.887	22 26 41.7	0.67	22 20 20.7	18 32 43.06	0.874	22 26 28.0	0.67
23	18 32 46.26	0.874	22 26 25.6	0.67	23 20 17.1	18 33 3.87	0.861	22 26 11.9	0.67
24	18 33 7.08	0.861	22 26 9.5	0.67	24 20 13.6	18 33 24.37	0.848	22 25 55.9	0.67
25	18 33 27.58	0.848	22 25 53.4	0.67	25 20 10.0	18 33 44.56	0.835	22 25 39.9	0.66
26	18 33 47.76	0.834	22 25 37.4	0.67	26 20 6.4	18 34 4.43	0.821	22 25 24.0	0.66
27	18 34 7.63	0.821	22 25 21.4	0.66	27 20 2.8	18 34 23.99	0.808	22 25 8.2	0.66
28	18 34 27.19	0.808	22 25 5.5	0.66	28 19 59.1	18 34 43.23	0.795	22 24 52.4	0.66
29	18 34 46.43	0.795	22 24 49.7	0.66	29 19 55.5	18 35 2.15	0.782	22 24 36.7	0.65
30	18 35 5.34	+0.781	−22 24 34.0	+0.65	30 19 51.9	18 35 20.75	+0.768	−22 24 21.1	+0.65

Date. 1871.	FOR WASHINGTON MEAN NOON. Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	FOR MERIDIAN TRANSIT. Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	18 34 46.43	+0.795	−22 24 49.7	+0.66	1 19 55.5	18 35 2.15	+0.782	−22 24 36.7	+0.65
2	18 35 5.34	0.781	22 24 34.0	0.65	2 19 51.9	18 35 20.75	0.768	22 24 21.1	0.65
3	18 35 23.93	0.768	22 24 18.4	0.65	3 19 48.3	18 35 39.02	0.754	22 24 5.6	0.64
4	18 35 42.19	0.754	22 24 2.9	0.64	4 19 44.6	18 35 56.95	0.740	22 23 50.2	0.64
5	18 36 0.11	0.739	22 23 47.5	0.64	5 19 41.0	18 36 14.54	0.726	22 23 35.0	0.63
6	18 36 17.68	0.725	22 23 32.3	0.63	6 19 37.4	18 36 31.78	0.711	22 23 20.0	0.62
7	18 36 34.90	0.710	22 23 17.3	0.62	7 19 33.7	18 36 48.68	0.697	22 23 5.1	0.62
8	18 36 51.78	0.696	22 23 2.4	0.62	8 19 30.1	18 37 5.23	0.682	22 22 50.4	0.61
9	18 37 8.31	0.681	22 22 47.7	0.61	9 19 26.4	18 37 21.43	0.668	22 22 35.9	0.60
10	18 37 24.48	0.666	22 22 33.2	0.60	10 19 22.7	18 37 37.28	0.653	22 22 21.6	0.59
11	18 37 40.30	0.652	22 22 18.9	0.59	11 19 19.0	18 37 52.78	0.638	22 22 7.4	9.59
12	18 37 55.77	0.637	22 22 4.7	0.59	12 19 15.4	18 38 7.92	0.623	22 21 53.4	0.58
13	18 38 10.88	0.622	22 21 50.7	0.58	13 19 11.7	18 38 22.69	0.608	22 21 39.6	0.57
14	18 38 25.62	0.606	22 21 36.9	0.57	14 19 8.0	18 38 37.09	0.592	22 21 26.1	0.56
15	18 38 39.98	0.590	22 21 23.4	0.56	15 19 4.3	18 38 51.12	0.577	22 21 12.9	0.54
16	18 38 53.96	0.575	22 21 10.2	0.54	16 19 0.6	18 39 4.77	0.561	22 21 0.0	0.53
17	18 39 7.56	0.559	22 20 57.3	0.53	17 18 56.9	18 39 18.04	0.545	22 20 47.3	0.52
18	18 39 20.79	0.543	22 20 44.7	0.52	18 18 53.1	18 39 30.93	0.529	22 20 34.9	0.51
19	18 39 33.64	0.527	22 20 32.3	0.51	19 18 49.4	18 39 43.43	0.513	22 20 22.8	0.50
20	18 39 46.10	0.511	22 20 20.2	0.50	20 18 45.7	18 39 55.54	0.496	22 20 11.0	0.49
21	18 39 58.16	0.494	22 20 8.4	0.49	21 18 41.9	18 40 7.25	0.480	22 19 59.4	0.48
22	18 40 9.82	0.477	22 19 56.9	0.48	22 18 38.2	18 40 18.57	0.463	22 19 48.1	0.47
23	18 40 21.07	0.460	22 19 45.6	0.46	23 18 34.4	18 40 29.49	0.447	22 19 37.1	0.45
24	18 40 31.92	0.444	22 19 34.6	0.45	24 18 30.7	18 40 40.02	0.430	22 19 26.5	0.43
25	18 40 42.38	0.427	22 19 24.0	0.43	25 18 26.9	18 40 50.15	0.414	22 19 16.3	0.42
26	18 40 52.44	0.411	22 19 13.8	0.42	26 18 23.1	18 40 59.89	0.397	22 19 6.4	0.40
27	18 41 2.11	0.395	22 19 4.0	0.40	27 18 19.4	18 41 9.23	0.381	22 18 56.9	0.39
28	18 41 11.38	0.378	22 18 54.6	0.39	28 18 15.6	18 41 18.16	0.364	22 18 47.7	0.38
29	18 41 20.24	0.360	22 18 45.5	0.37	29 18 11.8	18 41 26.68	0.346	22 18 38.9	0.36
30	18 41 28.68	0.343	22 18 36.8	0.36	30 18 8.0	18 41 34.78	0.329	22 18 30.5	0.34
31	18 41 36.70	0.325	22 18 28.4	0.34	31 18 4.2	18 41 42.46	0.311	22 18 22.4	0.33
Apr. 1	18 41 44.30	0.308	22 18 20.4	0.32	1 18 0.4	18 41 49.73	0.295	22 18 14.7	0.31
2	18 41 51.49	0.291	22 18 12.8	0.31	2 17 56.6	18 41 56.60	0.278	22 18 7.4	0.29
3	18 41 58.28	0.274	22 18 5.6	0.29	3 17 52.7	18 42 3.06	0.261	22 18 0.6	0.28
4	18 42 4.66	0.257	22 17 58.9	0.27	4 17 48.9	18 42 9.11	0.243	22 17 54.2	0.26
5	18 42 10.62	0.240	22 17 52.6	0.25	5 17 45.1	18 42 14.74	0.226	22 17 48.2	0.24
6	18 42 16.16	0.222	22 17 46.7	0.24	6 17 41.2	18 42 19.96	0.209	22 17 42.6	0.23
7	18 42 21.28	0.205	22 17 41.2	0.22	7 17 37.4	18 42 24.76	0.191	22 17 37.4	0.21
8	18 42 25.98	0.187	22 17 36.1	0.20	8 17 33.5	18 42 29.14	0.174	22 17 32.6	0.19
9	18 42 30.25	0.169	22 17 31.4	0.19	9 17 29.1	18 42 33.09	0.156	22 17 28.3	0.17
10	18 42 34.10	0.151	22 17 27.2	0.16	10 17 25.8	18 42 36.62	0.138	22 17 24.5	0.15
11	18 42 37.52	0.134	22 17 23.5	0.14	11 17 21.9	18 42 39.72	0.120	22 17 21.1	0.13
12	18 42 40.51	0.116	22 17 20.3	0.12	12 17 18.0	18 42 42.40	0.103	22 17 18.2	0.11
13	18 42 43.08	0.098	22 17 17.5	0.11	13 17 14.1	18 42 44.66	0.085	22 17 15.7	0.10
14	18 42 45.22	0.080	22 17 15.1	0.09	14 17 10.2	18 42 46.50	0.068	22 17 13.6	0.08
15	18 42 46.94	0.063	22 17 13.2	0.07	15 17 6.3	18 42 47.92	0.050	22 17 12.0	0.06
16	18 42 48.24	0.045	22 17 11.7	0.05	16 17 2.4	18 42 48.91	0.033	22 17 10.8	0.04
17	18 42 49.12	0.028	22 17 10.6	0.04	17 16 58.5	18 42 49.48	+0.015	22 17 10.1	+0.02
18	18 42 49.57	+0.010	22 17 10.0	+0.01	18 16 54.6	18 42 49.62	−0.003	22 17 9.8	0.00
19	18 42 49.59	−0.008	22 17 9.9	−0.01	19 16 50.6	18 42 49.34	0.021	22 17 10.0	−0.02
20	18 42 49.18	0.026	22 17 10.3	0.03	20 16 46.7	18 42 48.63	0.039	22 17 10.7	0.04
21	18 42 48.34	0.044	22 17 11.1	0.04	21 16 42.7	18 42 47.49	0.056	22 17 11.9	0.06
22	18 42 47.07	0.062	22 17 12.4	0.06	22 16 38.8	18 42 45.93	0.074	22 17 13.5	0.08
23	18 42 45.38	0.079	22 17 14.1	0.08	23 16 34.8	18 42 43.96	0.091	22 17 15.5	0.09
24	18 42 43.27	0.096	22 17 16.3	0.10	24 16 30.8	18 42 41.58	0.108	22 17 18.0	0.11
25	18 42 40.75	0.114	22 17 19.0	0.12	25 16 26.9	18 42 38.79	0.125	22 17 21.0	0.14
26	18 42 37.82	0.131	22 17 22.2	0.14	26 16 22.9	18 42 35.58	0.143	22 17 24.5	0.16
27	18 42 34.47	0.148	22 17 25.8	0.16	27 16 18.9	18 42 31.95	0.160	22 17 28.5	0.18
28	18 42 30.70	0.166	22 17 29.9	0.18	28 16 14.9	18 42 27.91	0.177	22 17 32.9	0.19
29	18 42 26.52	0.183	22 17 34.4	0.20	29 16 10.9	18 42 23.47	0.193	22 17 37.7	0.21
30	18 42 21.94	0.199	22 17 39.4	0.22	30 16 6.8	18 42 18.63	0.210	22 17 43.0	0.23
31	18 42 16.95	−0.216	−22 17 44.8	−0.24	31 16 2.8	18 42 13.39	−0.227	−22 17 48.7	−0.25

SATURN, 1871.

Date 1871.	FOR WASHINGTON MEAN NOON Apparent Right Ascension	Diff. for 1 hour	Apparent Declination	Diff. for 1 hour	FOR MERIDIAN TRANSIT Mean Time of Transit	Apparent Right Ascension	[illegible]	Apparent Declination	[illegible]
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	
May 1	18 42 16.[illegible]	−0.216	−22 17 44.8	−0.24	1 16 2[illegible]	18 42 11.[illegible]	−0.2[illegible]	22 17 [illegible]	[illegible]
2	18 42 11.4[illegible]	0.231	22 17 50.7	0.25	2 15 5[illegible]	18 42 7.7[illegible]	0.2[illegible]	22 17 [illegible]	[illegible]
3	18 42 5.77	0.240	22 17 57.0	0.27	3 15 54.[illegible]	18 42 1.71	0.2[illegible]	22 18 1.[illegible]	[illegible]
4	18 41 5[illegible]	0.2[illegible]	22 18 [illegible]	0.2[illegible]	4 15 50.7	18 41 5[illegible]	0.2[illegible]	22 18 [illegible]	[illegible]
5	18 41 5[illegible]	0.2[illegible]	22 18 11.0	0.31	5 15 46.7	18 41 4[illegible]	0.2[illegible]	22 18 [illegible]	[illegible]
6	18 41 46.[illegible]	0.2[illegible]	22 18 18.6	0.33	6 15 42.6	18 41 41.[illegible]	0.3[illegible]	22 18 2[illegible]	[illegible]
7	18 41 38.67	0.31[illegible]	22 18 26.7	0.35	7 15 38.6	18 41 33.[illegible]	0.3[illegible]	22 18 3[illegible]	[illegible]
8	18 41 30.[illegible]	0.321	22 18 35.2	0.36	8 15 34.[illegible]	18 41 2[illegible]	0.3[illegible]	22 18 [illegible]	[illegible]
9	18 41 22.7[illegible]	0.337	22 18 44.1	0.38	9 15 30.[illegible]	18 41 17.34	0.3[illegible]	22 18 [illegible]	[illegible]
10	18 41 14.[illegible]	0.352	22 18 53.6	0.40	10 15 26.4	18 41 [illegible]	0.3[illegible]	22 18 [illegible]	[illegible]
11	18 41 5.60	0.37[illegible]	22 19 3.1	0.41	11 15 22.1	18 40 5[illegible]	0.3[illegible]	22 19 [illegible]	[illegible]
12	18 40 56.14	0.38[illegible]	22 19 13.2	0.43	12 15 18.2	18 40 5[illegible]	0.4[illegible]	22 19 [illegible]	[illegible]
13	18 40 46.[illegible]	0.40[illegible]	22 19 23.7	0.45	13 15 14.1	18 40 4[illegible]	0.41[illegible]	22 19 [illegible]	[illegible]
14	18 40 36.[illegible]	0.4[illegible]	22 19 34.6	0.46	14 15 10.[illegible]	18 40 [illegible]	0.4[illegible]	22 19 41.[illegible]	[illegible]
15	18 40 26.17	0.4[illegible]	22 19 4[illegible]	0.47	15 15 [illegible]	18 40 [illegible]	0.44[illegible]	22 19 [illegible]	[illegible]
16	18 40 15.[illegible]	0.4[illegible]	22 19 57.4	0.49	16 15 1.[illegible]	18 40 [illegible]	0.4[illegible]	22 20 4.[illegible]	[illegible]
17	18 40 4.41	0.46[illegible]	22 20 [illegible]	0.[illegible]	17 14 57.7	18 39 5[illegible]	0.47[illegible]	22 20 1[illegible]	[illegible]
18	18 39 5[illegible]	0.4[illegible]	22 20 21.6	0.[illegible]	18 14 5[illegible]	18 39 4[illegible]	0.4[illegible]	22 20 2[illegible]	[illegible]
19	18 39 41.[illegible]	0.4[illegible]	22 20 34.2	0.[illegible]	19 14 4[illegible]	18 39 3[illegible]	0.[illegible]	22 20 4[illegible]	[illegible]
20	18 39 2[illegible]	0.[illegible]	22 20 47.[illegible]	0.[illegible]	20 14 4[illegible]	18 39 2[illegible]	0.[illegible]	22 20 [illegible]	[illegible]
21	18 39 16.[illegible]	0.[illegible]	22 21 0.[illegible]	0.[illegible]	21 14 41.1	18 39 [illegible]	0.[illegible]	22 21 [illegible]	[illegible]
22	18 39 4.[illegible]	0.[illegible]	22 21 14.1	0.[illegible]	22 14 3[illegible]	18 38 5[illegible]	0.[illegible]	22 21 2[illegible]	[illegible]
23	18 38 5[illegible]	0.[illegible]	22 21 2[illegible]	0.[illegible]	23 14 3[illegible]	18 38 4[illegible]	0.[illegible]	22 21 [illegible]	[illegible]
24	18 38 [illegible]	0.[illegible]	22 21 4[illegible]	0.[illegible]	24 14 2[illegible]	18 38 2[illegible]	0.[illegible]	22 21	[illegible]
25	18 38 2[illegible]	0.[illegible]	22 21 [illegible]	0.61	25 14 2[illegible]	18 38 1[illegible]	0.[illegible]	22 2[illegible]	[illegible]
26	18 38 1[illegible]	0.[illegible]	22 22 11.[illegible]	0.[illegible]	26 14 2[illegible]	18 38 1.71	0.[illegible]	22 22 [illegible]	[illegible]
27	18 37 [illegible]	0.[illegible]	22 22 [illegible]	0.[illegible]	27 14 1[illegible]	18 37 47.[illegible]	0.[illegible]	22 22 [illegible]	[illegible]
28	18 37 41.[illegible]	0.[illegible]	22 22 41.[illegible]	0.[illegible]	28 14 1[illegible]	18 37 3[illegible]	0.[illegible]	22 22	[illegible]
29	18 37 2[illegible]	0.[illegible]	22 22 5[illegible]	0.[illegible]	29 14 7.[illegible]	18 37 17.[illegible]	0.[illegible]	22 2[illegible]	[illegible]
30	18 37 11.[illegible]	0.[illegible]	22 23 11.[illegible]	0.[illegible]	30 14 [illegible]	18 37 [illegible]	0.[illegible]	22 2[illegible]	[illegible]
31	18 36 [illegible]	0.[illegible]	22 23 2[illegible]	0.67	31 13 5[illegible]	18 36 [illegible]	0.[illegible]	22 2[illegible]	[illegible]
June 1	18 36 4[illegible]	0.[illegible]	22 23 4[illegible]	0.[illegible]	1 13 5[illegible]	18 36 3[illegible]	0.[illegible]	22 2[illegible]	[illegible]
2	18 36 [illegible]	0.[illegible]	22 24 [illegible]	0.[illegible]	2 13 5[illegible]	18 36 [illegible]	0.[illegible]	22 2[illegible]	[illegible]
3	18 36 [illegible]	0.[illegible]	22 24 1[illegible]	0.70	3 13 4[illegible]	18 35 [illegible]	0.[illegible]	22 2[illegible]	[illegible]
4	18 35 [illegible]	0.[illegible]	22 24 [illegible]	0.70	4 13 4[illegible]	18 35 [illegible]	0.[illegible]	22 2[illegible]	[illegible]
5	18 35 [illegible]	0.[illegible]	22 24 [illegible]	0.71	5 13 3[illegible]	18 35 [illegible]	0.[illegible]	22 2[illegible]	[illegible]
6	18 35 [illegible]	0.[illegible]	22 25 [illegible]	0.72	6 13 3[illegible]	18 35 [illegible]	0.[illegible]	22 2[illegible]	[illegible]
7	18 35 [illegible]	0.[illegible]	22 25 [illegible]	0.72	7 13 [illegible]	18 34 [illegible]	0.[illegible]	22 2[illegible]	[illegible]
8	18 34 [illegible]	0.[illegible]	22 25 44.[illegible]	0.7[illegible]	8 13 2[illegible]	18 34 [illegible]	0.[illegible]	22 2[illegible]	[illegible]
9	18 34 [illegible]	0.7[illegible]	22 2[illegible]	0.74	9 13 2[illegible]	18 34 1[illegible]	0.[illegible]	22 2[illegible]	[illegible]
10	18 34 1[illegible]	0.7[illegible]	22 2[illegible] 1[illegible]	0.74	10 13 17.[illegible]	18 34 1[illegible]	0.[illegible]	22 2[illegible]	[illegible]
11	18 [illegible]	0.[illegible]	22 2[illegible]	0.7[illegible]	11 13 1[illegible]	18 33 [illegible]	0.[illegible]	22 2[illegible]	[illegible]
12	18 [illegible]	0.7[illegible]	22 2[illegible]	0.[illegible]	12 13 [illegible]	18 33 [illegible]	0.[illegible]	22 2[illegible]	[illegible]
13	18 33 1[illegible]	0.[illegible]	22 27 1[illegible]	0.[illegible]	13 13 [illegible]	18 33 [illegible]	0.[illegible]	22 2[illegible]	[illegible]
14	18 32 [illegible]	0.[illegible]	22 27 3[illegible]	0.[illegible]	14 13 [illegible]	18 32 [illegible]	0.[illegible]	22 2[illegible]	[illegible]
15	18 32 [illegible]	0.[illegible]	22 27 [illegible]	0.[illegible]	15 12 [illegible]	18 32 [illegible]	0.[illegible]	22 2[illegible]	[illegible]
16	18 [illegible]	[illegible]	22 28 [illegible]	0.[illegible]	16 12 [illegible]	18 32 1[illegible]	[illegible]	22 2[illegible]	[illegible]
17	18 [illegible]	[illegible]	22 28 [illegible]	0.[illegible]	17 12 [illegible]	18 31 [illegible]	[illegible]	22 2[illegible]	[illegible]
18	18 31 [illegible]	0.[illegible]	22 28 44.[illegible]	0.[illegible]	18 12 [illegible]	18 31 [illegible]	[illegible]	22 2[illegible]	[illegible]
19	18 31 [illegible]	0.[illegible]	22 29 [illegible]	0.[illegible]	19 12 [illegible]	18 31 17.1[illegible]	[illegible]	22 2[illegible]	[illegible]
20	18 31 [illegible]	[illegible]	22 29 [illegible]	0.[illegible]	20 12 [illegible]	18 30 [illegible]	[illegible]	22 [illegible]	[illegible]
21	18 30 [illegible]	0.[illegible]	22 29 [illegible]	0.[illegible]	21 12 [illegible]	18 30 [illegible]	[illegible]	22 2[illegible]	[illegible]
22	18 30 [illegible]	[illegible]	22 2[illegible]	[illegible]	22 12 [illegible]	18 30 [illegible]	[illegible]	22 [illegible]	[illegible]
23	18 [illegible]	[illegible]	22 [illegible]	[illegible]	23 12 [illegible]	18 [illegible]	[illegible]	22 [illegible]	[illegible]
24	18 2[illegible]	[illegible]	22 3[illegible]	[illegible]	24 12 [illegible]	18 2[illegible]	[illegible]	22 3[illegible]	[illegible]
25	18 2[illegible]	[illegible]	22 3[illegible]	[illegible]	25 12 [illegible]	18 2[illegible]	[illegible]	22 [illegible]	[illegible]
26	18 2[illegible]	[illegible]	22 31 [illegible]	[illegible]	26 12	18 2[illegible]	[illegible]	22 3[illegible]	[illegible]
27	18 2[illegible]	[illegible]	22 [illegible]	[illegible]	27 12	18 2[illegible]	[illegible]	22 [illegible]	[illegible]
28	18 2[illegible]	[illegible]	22 31 [illegible]	[illegible]	28 12 [illegible]	18 2[illegible]	[illegible]	22 3[illegible]	[illegible]
29	18 2[illegible]	[illegible]	22 32 [illegible]	[illegible]	29 11 [illegible]	18 2[illegible]	[illegible]	22 32 [illegible]	[illegible]
30	18 2[illegible]	[illegible]	22 32 [illegible]	[illegible]	30 11 [illegible]	18 2[illegible]	[illegible]	22 32 [illegible]	[illegible]
31	18 2[illegible]	[illegible]	22 32 41.[illegible]	[illegible]	1 11 [illegible]	18 2[illegible]	[illegible]	22 32 [illegible]	[illegible]

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	18 27 38.64	-0.795	-22 32 41.9	-0.75	1 11 48.3	18 27 29.26	-0.792	-22 32 50.8	-0.75
2	18 27 19.57	0.794	22 32 59.9	0.75	2 11 44.1	18 27 10.27	0.791	22 33 8.7	0.74
3	18 27 0.53	0.793	22 33 17.8	0.74	3 11 39.8	18 26 51.31	0.789	22 33 26.5	0.74
4	18 26 41.53	0.791	22 33 35.6	0.74	4 11 35.6	18 26 32.39	0.787	22 33 44.2	0.74
5	18 26 22.58	0.788	22 33 53.3	0.73	5 11 31.3	18 26 13.52	0.785	22 34 1.8	0.73
6	18 26 3.69	0.786	22 34 10.8	0.73	6 11 27.1	18 25 54.71	0.782	22 34 19.2	0.72
7	18 25 44.87	0.782	22 34 28.2	0.72	7 11 22.8	18 25 35.98	0.779	22 34 36.5	0.72
8	18 25 26.14	0.779	22 34 45.5	0.72	8 11 18.6	18 25 17.34	0.775	22 34 53.7	0.72
9	18 25 7.50	0.775	22 35 2.8	0.72	9 11 14.3	18 24 58.80	0.770	22 35 10.9	0.71
10	18 24 48.96	0.770	22 35 20.0	0.71	10 11 10.1	18 24 40.37	0.766	22 35 28.0	0.71
11	18 24 30.53	0.765	22 35 37.1	0.71	11 11 5.9	18 24 22.05	0.761	22 35 45.0	0.71
12	18 24 12.22	0.760	22 35 54.1	0.70	12 11 1.6	18 24 3.85	0.756	22 36 1.9	0.70
13	18 23 54.04	0.755	22 36 10.9	0.70	13 10 57.4	18 23 45.78	0.750	22 36 18.6	0.69
14	18 23 36.00	0.749	22 36 27.5	0.69	14 10 53.2	18 23 27.86	0.744	22 36 35.1	0.68
15	18 23 18.11	0.742	22 36 44.0	0.68	15 10 48.9	18 23 10.09	0.737	22 36 51.4	0.68
16	18 23 0.37	0.736	22 37 0.3	0.68	16 10 44.7	18 22 52.48	0.730	22 37 7.6	0.67
17	18 22 42.80	0.728	22 37 16.5	0.67	17 10 40.5	18 22 35.04	0.723	22 37 23.7	0.67
18	18 22 25.41	0.721	22 37 32.6	0.67	18 10 36.3	18 22 17.78	0.715	22 37 39.7	0.66
19	18 22 8.20	0.713	22 37 48.6	0.66	19 10 32.1	18 22 0.70	0.707	22 37 55.6	0.66
20	18 21 51.18	0.705	22 38 4.4	0.66	20 10 27.9	18 21 43.82	0.699	22 38 11.3	0.65
21	18 21 34.36	0.696	22 38 20.1	0.65	21 10 23.7	18 21 27.14	0.691	22 38 26.9	0.65
22	18 21 17.76	0.687	22 38 35.6	0.64	22 10 19.5	18 21 10.67	0.681	22 38 42.3	0.64
23	18 21 1.38	0.678	22 38 51.0	0.64	23 10 15.3	18 20 54.43	0.672	22 38 57.5	0.63
24	18 20 45.23	0.668	22 39 6.2	0.63	24 10 11.1	18 20 38.43	0.662	22 39 12.6	0.62
25	18 20 29.31	0.658	22 39 21.2	0.62	25 10 6.9	18 20 22.67	0.652	22 39 27.5	0.62
26	18 20 13.64	0.648	22 39 36.0	0.61	26 10 2.7	18 20 7.15	0.641	22 39 42.2	0.61
27	18 19 58.22	0.637	22 39 50.7	0.61	27 9 58.5	18 19 51.88	0.631	22 39 56.8	0.61
28	18 19 43.06	0.626	22 40 5.3	0.60	28 9 54.3	18 19 36.87	0.620	22 40 11.3	0.60
29	18 19 28.16	0.615	22 40 19.7	0.60	29 9 50.1	18 19 22.12	0.609	22 40 25.6	0.59
30	18 19 13.52	0.604	22 40 34.0	0.59	30 9 46.0	18 19 7.64	0.598	22 40 39.8	0.59
31	18 18 59.15	0.593	22 40 48.1	0.59	31 9 41.8	18 18 53.43	0.586	22 40 53.8	0.58
Aug. 1	18 18 45.07	0.580	22 41 2.1	0.58	1 9 37.6	18 18 39.51	0.574	22 41 7.7	0.58
2	18 18 31.29	0.568	22 41 15.9	0.57	2 9 33.5	18 18 25.88	0.561	22 41 21.4	0.57
3	18 18 17.81	0.555	22 41 29.5	0.56	3 9 29.3	18 18 12.56	0.549	22 41 34.9	0.56
4	18 18 4.64	0.542	22 41 43.0	0.56	4 9 25.2	18 17 59.55	0.536	22 41 48.3	0.56
5	18 17 51.78	0.529	22 41 56.4	0.55	5 9 21.0	18 17 46.85	0.523	22 42 1.6	0.55
6	18 17 39.23	0.516	22 42 9.6	0.55	6 9 16.9	18 17 34.46	0.510	22 42 14.7	0.54
7	18 17 27.00	0.503	22 42 22.6	0.54	7 9 12.7	18 17 22.39	0.496	22 42 27.6	0.53
8	18 17 15.09	0.489	22 42 35.4	0.53	8 9 8.6	18 17 10.64	0.483	22 42 40.3	0.52
9	18 17 3.51	0.476	22 42 48.0	0.52	9 9 4.5	18 16 59.22	0.469	22 42 52.8	0.52
10	18 16 52.26	0.462	22 43 0.5	0.52	10 9 0.4	18 16 48.13	0.455	22 43 5.2	0.51
11	18 16 41.36	0.447	22 43 12.9	0.51	11 8 56.3	18 16 37.39	0.440	22 43 17.5	0.51
12	18 16 30.82	0.432	22 43 25.1	0.51	12 8 52.2	18 16 27.00	0.425	22 43 29.6	0.50
13	18 16 20.63	0.417	22 43 37.2	0.50	13 8 48.1	18 16 16.97	0.410	22 43 41.6	0.50
14	18 16 10.80	0.402	22 43 49.1	0.49	14 8 44.0	18 16 7.31	0.395	22 43 53.4	0.49
15	18 16 1.34	0.386	22 44 0.8	0.49	15 8 39.9	18 15 58.02	0.379	22 44 5.0	0.48
16	18 15 52.25	0.371	22 44 12.4	0.48	16 8 35.8	18 15 49.10	0.364	22 44 16.5	0.48
17	18 15 43.54	0.355	22 44 23.9	0.48	17 8 31.7	18 15 40.55	0.348	22 44 27.9	0.47
18	18 15 35.21	0.339	22 44 35.3	0.47	18 8 27.7	18 15 32.38	0.333	22 44 39.2	0.47
19	18 15 27.26	0.323	22 44 46.5	0.46	19 8 23.6	18 15 24.58	0.317	22 44 50.4	0.46
20	18 15 19.69	0.307	22 44 57.6	0.46	20 8 19.5	18 15 17.16	0.301	22 45 1.4	0.45
21	18 15 12.51	0.291	22 45 8.5	0.45	21 8 15.5	18 15 10.13	0.285	22 45 12.2	0.45
22	18 15 5.73	0.274	22 45 19.3	0.45	22 8 11.4	18 15 3.50	0.268	22 45 22.9	0.44
23	18 14 59.35	0.257	22 45 29.9	0.44	23 8 7.4	18 14 57.28	0.251	22 45 33.5	0.44
24	18 14 53.38	0.240	22 45 40.4	0.43	24 8 3.4	18 14 51.46	0.234	22 45 43.9	0.43
25	18 14 47.81	0.224	22 45 50.7	0.43	25 7 59.4	18 14 46.04	0.217	22 45 54.1	0.42
26	18 14 42.64	0.207	22 46 0.9	0.42	26 7 55.3	18 14 41.02	0.201	22 46 4.2	0.42
27	18 14 37.87	0.190	22 46 11.0	0.42	27 7 51.3	18 14 36.40	0.184	22 46 14.2	0.41
28	18 14 33.51	0.173	22 46 20.9	0.41	28 7 47.3	18 14 32.19	0.167	22 46 24.1	0.41
29	18 14 29.56	0.156	22 46 30.7	0.40	29 7 43.3	18 14 28.38	0.150	22 46 33.8	0.40
30	18 14 26.02	0.139	22 46 40.3	0.40	30 7 39.4	18 14 24.98	0.133	22 46 43.3	0.39
31	18 14 22.89	-0.122	-22 46 49.8	-0.39	31 7 35.4	18 14 21.99	-0.116	-22 46 52.7	-0.39

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	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	18 14 20.18	-0.104	-22 46 59.1	-0.39	1 7 31.4	18 14 19.42	-0.098	-22 47 1.9	-0.38
2	18 14 17.89	0.087	22 47 8.3	0.38	2 7 27.4	18 14 17.27	0.081	22 47 11.0	0.38
3	18 14 16.02	0.069	22 47 17.3	0.37	3 7 23.5	18 14 15.53	0.064	22 47 20.0	0.37
4	18 14 14.56	0.052	22 47 26.2	0.37	4 7 19.5	18 14 14.20	0.047	22 47 28.9	0.37
5	18 14 13.52	0.034	22 47 34.9	0.36	5 7 15.6	18 14 13.29	0.029	22 47 37.6	0.36
6	18 14 12.91	-0.017	22 47 43.5	0.35	6 7 11.6	18 14 12.81	-0.011	22 47 46.1	0.35
7	18 14 12.72	+0.001	22 47 51.9	0.35	7 7 7.7	18 14 12.75	+0.006	22 47 54.5	0.35
8	18 14 12.96	0.019	22 48 0.2	0.34	8 7 3.8	18 14 13.11	0.024	22 48 2.7	0.34
9	18 14 13.62	0.036	22 48 8.4	0.34	9 6 59.9	18 14 13.89	0.041	22 48 10.8	0.33
10	18 14 14.71	0.054	22 48 16.4	0.33	10 6 55.9	18 14 15.10	0.059	22 48 18.7	0.32
11	18 14 16.22	0.072	22 48 24.2	0.32	11 6 52.0	18 14 16.73	0.077	22 48 26.4	0.32
12	18 14 18.16	0.090	22 48 31.9	0.32	12 6 48.1	18 14 18.79	0.095	22 48 34.0	0.31
13	18 14 20.53	0.108	22 48 39.4	0.31	13 6 44.2	18 14 21.27	0.112	22 48 41.4	0.31
14	18 14 23.33	0.126	22 48 46.7	0.30	14 6 40.4	18 14 24.18	0.130	22 48 48.7	0.30
15	18 14 26.56	0.143	22 48 53.9	0.30	15 6 36.5	18 14 27.52	0.148	22 48 55.9	0.30
16	18 14 30.21	0.161	22 49 0.9	0.29	16 6 32.6	18 14 31.28	0.165	22 49 2.9	0.29
17	18 14 34.29	0.179	22 49 7.8	0.28	17 6 28.7	18 14 35.46	0.183	22 49 9.7	0.28
18	18 14 38.80	0.197	22 49 14.5	0.27	18 6 24.9	18 14 40.07	0.201	22 49 16.3	0.27
19	18 14 43.74	0.215	22 49 21.0	0.27	19 6 21.0	18 14 45.11	0.219	22 49 22.7	0.26
20	18 14 49.10	0.232	22 49 27.3	0.26	20 6 17.2	18 14 50.57	0.236	22 49 28.9	0.26
21	18 14 54.88	0.250	22 49 33.4	0.25	21 6 13.4	18 14 56.44	0.253	22 49 35.0	0.25
22	18 15 1.08	0.267	22 49 39.3	0.24	22 6 9.5	18 15 2.73	0.271	22 49 40.9	0.24
23	18 15 7.70	0.284	22 49 45.1	0.24	23 6 5.7	18 15 9.44	0.288	22 49 46.6	0.23
24	18 15 14.73	0.302	22 49 50.7	0.23	24 6 1.9	18 15 16.56	0.305	22 49 52.1	0.22
25	18 15 22.18	0.319	22 49 56.1	0.22	25 5 58.1	18 15 24.09	0.322	22 49 57.4	0.22
26	18 15 30.04	0.336	22 50 1.3	0.21	26 5 54.3	18 15 32.03	0.339	22 50 2.5	0.21
27	18 15 38.32	0.354	22 50 6.3	0.20	27 5 50.5	18 15 40.38	0.357	22 50 7.4	0.20
28	18 15 47.01	0.370	22 50 11.0	0.19	28 5 46.7	18 15 49.15	0.374	22 50 12.1	0.19
29	18 15 56.10	0.387	22 50 15.5	0.18	29 5 43.0	18 15 58.32	0.390	22 50 16.6	0.18
30	18 16 5.60	0.404	22 50 19.8	0.17	30 5 39.2	18 16 7.89	0.407	22 50 20.8	0.17
Oct. 1	18 16 15.50	0.421	22 50 23.9	0.16	1 5 35.4	18 16 17.86	0.424	22 50 24.8	0.16
2	18 16 25.80	0.437	22 50 27.7	0.15	2 5 31.7	18 16 28.23	0.440	22 50 28.5	0.15
3	18 16 36.50	0.454	22 50 31.3	0.14	3 5 27.9	18 16 38.99	0.457	22 50 32.0	0.14
4	18 16 47.60	0.471	22 50 34.6	0.13	4 5 24.2	18 16 50.15	0.473	22 50 35.3	0.13
5	18 16 59.09	0.487	22 50 37.7	0.12	5 5 20.4	18 17 1.70	0.489	22 50 38.4	0.12
6	18 17 10.97	0.503	22 50 40.6	0.11	6 5 16.7	18 17 13.64	0.505	22 50 41.2	0.11
7	18 17 23.24	0.519	22 50 43.2	0.10	7 5 13.0	18 17 25.96	0.521	22 50 43.8	0.10
8	18 17 35.90	0.536	22 50 45.6	0.09	8 5 9.2	18 17 38.67	0.538	22 50 46.1	0.09
9	18 17 48.95	0.552	22 50 47.8	0.09	9 5 5.5	18 17 51.77	0.554	22 50 48.2	0.08
10	18 18 2.38	0.568	22 50 49.7	0.07	10 5 1.8	18 18 5.25	0.570	22 50 50.0	0.07
11	18 18 16.20	0.584	22 50 51.3	0.06	11 4 58.1	18 18 19.11	0.585	22 50 51.5	0.06
12	18 18 30.40	0.600	22 50 52.6	0.05	12 4 54.4	18 18 33.35	0.601	22 50 52.7	0.05
13	18 18 44.98	0.615	22 50 53.6	0.04	13 4 50.7	18 18 47.97	0.617	22 50 53.7	0.04
14	18 18 59.93	0.631	22 50 54.3	0.02	14 4 47.1	18 19 2.95	0.632	22 50 54.4	0.02
15	18 19 15.25	0.646	22 50 54.7	-0.01	15 4 43.4	18 19 18.30	0.647	22 50 54.8	-0.01
16	18 19 30.93	0.661	22 50 54.8	0.00	16 4 39.7	18 19 34.01	0.662	22 50 54.8	+0.01
17	18 19 46.97	0.676	22 50 54.6	+0.01	17 4 36.0	18 19 50.08	0.677	22 50 54.5	0.02
18	18 20 3.37	0.691	22 50 54.1	0.03	18 4 32.4	18 20 6.50	0.692	22 50 54.0	0.03
19	18 20 20.12	0.705	22 50 53.4	0.04	19 4 28.7	18 20 23.28	0.706	22 50 53.2	0.04
20	18 20 37.22	0.720	22 50 52.4	0.05	20 4 25.1	18 20 40.41	0.721	22 50 52.1	0.05
21	18 20 54.67	0.734	22 50 51.0	0.07	21 4 21.4	18 20 57.88	0.735	22 50 50.6	0.07
22	18 21 12.46	0.748	22 50 49.2	0.08	22 4 17.8	18 21 15.68	0.749	22 50 48.7	0.09
23	18 21 30.59	0.762	22 50 47.0	0.10	23 4 14.2	18 21 33.82	0.763	22 50 46.5	0.10
24	18 21 49.05	0.776	22 50 44.4	0.11	24 4 10.5	18 21 52.29	0.776	22 50 43.9	0.11
25	18 22 7.84	0.790	22 50 41.5	0.13	25 4 6.9	18 22 11.09	0.790	22 50 41.0	0.13
26	18 22 26.95	0.803	22 50 38.3	0.14	26 4 3.3	18 22 30.21	0.803	22 50 37.8	0.14
27	18 22 46.39	0.817	22 50 34.7	0.16	27 3 59.7	18 22 49.65	0.817	22 50 34.2	0.16
28	18 23 6.15	0.830	22 50 30.8	0.17	28 3 56.1	18 23 9.41	0.830	22 50 30.2	0.17
29	18 23 26.22	0.843	22 50 26.5	0.19	29 3 52.5	18 23 29.49	0.843	22 50 25.8	0.19
30	18 23 46.60	0.856	22 50 21.8	0.20	30 3 48.9	18 23 49.87	0.855	22 50 21.0	0.21
31	18 24 7.29	0.868	22 50 16.7	0.22	31 3 45.3	18 24 10.55	0.868	22 50 15.8	0.22
32	18 24 28.28	+0.881	-22 50 11.2	+0.24	32 3 41.8	18 24 31.53	+0.880	-22 50 10.2	+0.24

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	18 24 28.28	+0.881	-22 50 11.2	+0.24	1 3 41.8	18 24 31.53	+0.880	-22 50 10.2	+0.24
2	18 24 49.56	0.893	22 50 5.3	0.25	2 3 38.2	18 24 52.80	0.893	22 50 4.3	0.25
3	18 25 11.13	0.905	22 49 59.1	0.27	3 3 34.6	18 25 14.37	0.905	22 49 58.1	0.27
4	18 25 32.99	0.917	22 49 52.5	0.29	4 3 31.0	18 25 36.23	0.917	22 49 51.5	0.29
5	18 25 55.14	0.929	22 49 45.4	0.30	5 3 27.5	18 25 58.37	0.928	22 49 44.4	0.31
6	18 26 17.58	0.941	22 49 37.9	0.32	6 3 23.9	18 26 20.79	0.940	22 49 36.8	0.33
7	18 26 40.31	0.953	22 49 30.0	0.34	7 3 20.3	18 26 43.50	0.952	22 49 28.8	0.34
8	18 27 3.32	0.964	22 49 21.6	0.36	8 3 16.8	18 27 6.49	0.964	22 49 20.4	0.36
9	18 27 26.60	0.975	22 49 12.8	0.37	9 3 13.2	18 27 29.75	0.975	22 49 11.6	0.38
10	18 27 50.14	0.986	22 49 3.6	0.39	10 3 9.7	18 27 53.27	0.985	22 49 2.4	0.39
11	18 28 13.94	0.997	22 48 54.0	0.41	11 3 6.2	18 28 17.04	0.996	22 48 52.7	0.41
12	18 28 37.99	1.007	22 48 43.9	0.43	12 3 2.6	18 28 41.06	1.006	22 48 42.6	0.43
13	18 29 2.28	1.017	22 48 33.4	0.45	13 2 59.1	18 29 5.32	1.016	22 48 32.1	0.45
14	18 29 26.82	1.028	22 48 22.4	0.47	14 2 55.6	18 29 29.83	1.026	22 48 21.1	0.47
15	18 29 51.61	1.038	22 48 11.0	0.49	15 2 52.1	18 29 54.58	1.036	22 48 9.6	0.49
16	18 30 16.64	1.048	22 47 59.1	0.51	16 2 48.5	18 30 19.58	1.047	22 47 57.7	0.51
17	18 30 41.91	1.058	22 47 46.7	0.53	17 2 45.0	18 30 44.82	1.056	22 47 45.3	0.53
18	18 31 7.42	1.068	22 47 33.8	0.55	18 2 41.5	18 31 10.29	1.066	22 47 32.4	0.55
19	18 31 33.15	1.077	22 47 20.5	0.56	19 2 38.0	18 31 35.98	1.075	22 47 19.0	0.57
20	18 31 59.09	1.085	22 47 6.7	0.59	20 2 34.5	18 32 1.88	1.083	22 47 5.2	0.59
21	18 32 25.23	1.093	22 46 52.4	0.61	21 2 31.0	18 32 27.98	1.092	22 46 50.9	0.61
22	18 32 51.57	1.102	22 46 37.6	0.63	22 2 27.5	18 32 54.28	1.100	22 46 36.1	0.62
23	18 33 18.11	1.110	22 46 22.4	0.64	23 2 24.0	18 33 20.78	1.108	22 46 20.9	0.64
24	18 33 44.85	1.118	22 46 6.7	0.66	24 2 20.5	18 33 47.48	1.116	22 46 5.2	0.66
25	18 34 11.79	1.126	22 45 50.5	0.69	25 2 17.1	18 34 14.37	1.124	22 45 49.0	0.69
26	18 34 38.92	1.134	22 45 33.8	0.71	26 2 13.6	18 34 41.45	1.132	22 45 32.3	0.71
27	18 35 6.24	1.142	22 45 16.6	0.73	27 2 10.1	18 35 8.72	1.140	22 45 15.1	0.73
28	18 35 33.74	1.149	22 44 59.0	0.74	28 2 6.6	18 35 36.17	1.147	22 44 57.4	0.75
29	18 36 1.41	1.156	22 44 40.9	0.76	29 2 3.2	18 36 3.79	1.154	22 44 39.3	0.76
30	18 36 29.25	1.163	22 44 22.3	0.79	30 1 59.7	18 36 31.57	1.161	22 44 20.7	0.79
Dec. 1	18 36 57.25	1.170	22 44 3.2	0.81	1 1 56.2	18 36 59.51	1.168	22 44 1.6	0.81
2	18 37 25.40	1.176	22 43 43.5	0.83	2 1 52.8	18 37 27.61	1.174	22 43 41.9	0.83
3	18 37 53.71	1.183	22 43 23.3	0.85	3 1 49.3	18 37 55.87	1.181	22 43 21.7	0.85
4	18 38 22.18	1.189	22 43 2.6	0.87	4 1 45.8	18 38 24.28	1.187	22 43 1.0	0.87
5	18 38 50.80	1.195	22 42 41.4	0.89	5 1 42.4	18 38 52.84	1.193	22 42 39.8	0.89
6	18 39 19.56	1.201	22 42 19.7	0.91	6 1 38.9	18 39 21.54	1.199	22 42 18.2	0.91
7	18 39 48.46	1.207	22 41 57.6	0.93	7 1 35.5	18 39 50.38	1.204	22 41 56.1	0.93
8	18 40 17.49	1.212	22 41 35.0	0.95	8 1 32.0	18 40 19.35	1.210	22 41 33.5	0.95
9	18 40 46.64	1.217	22 41 11.9	0.97	9 1 28.6	18 40 48.44	1.215	22 41 10.4	0.97
10	18 41 15.91	1.222	22 40 48.3	0.99	10 1 25.1	18 41 17.65	1.220	22 40 46.8	0.99
11	18 41 45.30	1.227	22 40 24.2	1.02	11 1 21.7	18 41 46.98	1.225	22 40 22.7	1.01
12	18 42 14.81	1.232	22 39 59.5	1.04	12 1 18.2	18 42 16.43	1.229	22 39 58.1	1.04
13	18 42 44.44	1.237	22 39 34.3	1.06	13 1 14.8	18 42 45.99	1.234	22 39 33.0	1.06
14	18 43 14.17	1.241	22 39 8.6	1.08	14 1 11.3	18 43 15.65	1.238	22 39 7.4	1.08
15	18 43 43.99	1.244	22 38 42.5	1.10	15 1 7.9	18 43 45.40	1.241	22 38 41.3	1.10
16	18 44 13.89	1.247	22 38 15.9	1.12	16 1 4.5	18 44 15.23	1.244	22 38 14.7	1.12
17	18 44 43.86	1.250	22 37 48.8	1.14	17 1 1.0	18 44 45.13	1.247	22 37 47.6	1.14
18	18 45 13.90	1.253	22 37 21.2	1.16	18 0 57.6	18 45 15.10	1.250	22 37 20.1	1.16
19	18 45 44.01	1.256	22 36 53.2	1.18	19 0 54.2	18 45 45.14	1.253	22 36 52.1	1.18
20	18 46 14.20	1.259	22 36 24.7	1.20	20 0 50.7	18 46 15.26	1.256	22 36 23.7	1.19
21	18 46 44.46	1.262	22 35 55.7	1.22	21 0 47.3	18 46 45.45	1.259	22 35 54.8	1.21
22	18 47 14.79	1.265	22 35 26.2	1.24	22 0 43.9	18 47 15.71	1.262	22 35 25.4	1.24
23	18 47 45.18	1.267	22 34 56.3	1.26	23 0 40.5	18 47 46.03	1.264	22 34 55.5	1.25
24	18 48 15.61	1.269	22 34 25.9	1.28	24 0 37.0	18 48 16.39	1.266	22 34 25.2	1.27
25	18 48 46.08	1.270	22 33 55.1	1.29	25 0 33.6	18 48 46.79	1.267	22 33 54.4	1.29
26	18 49 16.58	1.271	22 33 23.8	1.31	26 0 30.2	18 49 17.22	1.269	22 33 23.2	1.31
27	18 49 47.11	1.273	22 32 52.0	1.33	27 0 26.8	18 49 47.68	1.270	22 32 51.5	1.33
28	18 50 17.67	1.274	22 32 19.8	1.35	28 0 23.3	18 50 18.17	1.271	22 32 19.3	1.35
29	18 50 48.26	1.275	22 31 47.2	1.37	29 0 19.9	18 50 48.69	1.272	22 31 46.7	1.36
30	18 51 18.87	1.276	22 31 14.2	1.39	30 0 16.5	18 51 19.23	1.273	22 31 13.8	1.38
31	18 51 49.50	1.276	22 30 40.7	1.40	31 0 13.1	18 51 49.78	1.273	22 30 40.4	1.40
32	18 52 20.14	+1.277	-22 30 6.8	+1.42	32 0 9.6	18 52 20.34	+1.274	-22 30 6.6	+1.42

	FOR WASHINGTON MEAN NOON				FOR MERIDIAN TRANSIT				
Date 1871.	Apparent Right Ascension	Diff. for 1 hour	Apparent Declination	Diff. for 1 hour	Mean Time of Transit	Apparent Right Ascension	Diff. for 1 hour of Long.	Apparent Declination	Diff. for [illegible]
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	
Jan 0	7 48 [illegible]	−0.43[illegible]	+21 38 41.6	+1.17	0 13 [illegible]	7 48 [illegible]	0.44[illegible]	+21 38 [illegible]	[illegible]
1	7 48 41.[illegible]	0.441	21 39 11.[illegible]	1.18	1 13 [illegible]	7 48 [illegible]	0.441	21 39 [illegible]	[illegible]
2	7 48 [illegible]	0.444	21 39 [illegible]	1.18	2 12 [illegible]	7 48 [illegible]	0.444	21 39 [illegible]	[illegible]
3	7 48 [illegible]	0.446	21 40 [illegible]	1.18	3 12 [illegible]	7 48 14.4[illegible]	0.446	21 40 [illegible]	[illegible]
4	7 48 [illegible]	0.44[illegible]	21 40 37.0	1.19	4 12 [illegible]	7 48 [illegible]	0.44[illegible]	21 40 [illegible]	[illegible]
5	7 47 [illegible]	0.4[illegible]	21 41 [illegible]	1.19	5 12 [illegible]	7 47 [illegible]	0.4[illegible]	21 41 [illegible]	[illegible]
6	7 47 47.[illegible]	0.4[illegible]	21 41 34.1	1.19	6 12 42.1	7 47 [illegible]	0.4[illegible]	21 41 [illegible]	[illegible]
7	7 47 [illegible]	0.4[illegible]	21 42 [illegible]	1.19	7 12 [illegible]	7 47 [illegible]	0.4[illegible]	21 42 [illegible]	[illegible]
8	7 47 [illegible]	0.4[illegible]	21 42 31.4	1.19	8 12 [illegible]	7 47 [illegible]	0.4[illegible]	21 42 [illegible]	[illegible]
9	7 47 1[illegible]	0.4[illegible]	21 43 [illegible]	1.19	9 12 [illegible]	7 47 [illegible]	0.4[illegible]	21 43 [illegible]	[illegible]
10	7 47 [illegible]	0.4[illegible]	21 43 [illegible]	1.19	10 12 [illegible]	7 46 [illegible]	0.4[illegible]	21 43 [illegible]	[illegible]
11	7 46 [illegible]	0.4[illegible]	21 43 57.1	1.19	11 12 21.7	7 46 47.[illegible]	0.4[illegible]	21 44 [illegible]	[illegible]
12	7 46 [illegible]	0.4[illegible]	21 44 [illegible]	1.19	12 12 17.[illegible]	7 46 [illegible]	0.4[illegible]	21 44 [illegible]	[illegible]
13	7 46 [illegible]	0.461	21 44 [illegible]	1.18	13 12 [illegible]	7 46 [illegible]	0.4[illegible]	21 4[illegible]	[illegible]
14	7 46 [illegible]	0.461	21 45 [illegible]	1.18	14 12 [illegible]	7 46 14.[illegible]	0.4[illegible]	21 4[illegible]	[illegible]
15	7 46 [illegible]	0.461	21 45 [illegible]	1.18	15 12 [illegible]	7 46 [illegible]	0.4[illegible]	21 [illegible]	[illegible]
16	7 45 [illegible]	0.461	21 46 1[illegible]	1.18	16 12 [illegible]	7 45 [illegible]	0.4[illegible]	21 [illegible]	[illegible]
17	7 45 [illegible]	0.461	21 46 47.7	1.17	17 11 57.0	7 45 41.17	0.4[illegible]	21 47 [illegible]	[illegible]
18	7 45 [illegible]	0.4[illegible]	21 47 1[illegible]	1.17	18 11 [illegible]	7 45 [illegible]	0.4[illegible]	21 47 [illegible]	[illegible]
19	7 45 [illegible]	0.4[illegible]	21 47 4[illegible]	1.16	19 11 4[illegible]	7 45 1[illegible]	0.4[illegible]	21 47 [illegible]	[illegible]
20	7 4[illegible] 11.[illegible]	0.4[illegible]	21 48 11.7	1.16	20 11 44.7	7 45 [illegible]	0.4[illegible]	21 48 [illegible]	[illegible]
21	7 45 [illegible]	0.4[illegible]	21 48 [illegible]	1.15	21 11 [illegible]	7 44 [illegible]	0.4[illegible]	21 48 [illegible]	[illegible]
22	7 44 [illegible]	0.4[illegible]	21 49 7.[illegible]	1.14	22 11 [illegible]	7 44 [illegible]	0.4[illegible]	21 49 [illegible]	[illegible]
23	7 44 [illegible]	0.4[illegible]	21 49 34.6	1.14	23 11 [illegible]	7 44 [illegible]	0.4[illegible]	21 49 [illegible]	[illegible]
24	7 44 [illegible]	0.4[illegible]	21 50 1.[illegible]	1.13	24 11 [illegible]	7 44 [illegible]	0.4[illegible]	21 50 14.[illegible]	[illegible]
25	7 44 1[illegible]	0.4[illegible]	21 50 [illegible]	1.12	25 11 [illegible]	7 44 1[illegible]	0.44[illegible]	21 50 [illegible]	[illegible]
26	7 44 [illegible] 17	0.44[illegible]	21 50 [illegible]	1.11	26 11 [illegible]	7 44 [illegible]	0.44[illegible]	21 [illegible]	[illegible]
27	7 43 [illegible]	0.44[illegible]	21 51 [illegible]	1.10	27 11 1.[illegible]	7 43 [illegible]	0.444	21 [illegible]	[illegible]
28	7 43 [illegible]	0.443	21 51 4[illegible]	1.[illegible]	28 11 11.[illegible]	7 43 41.[illegible]	0.441	21 [illegible]	[illegible]
29	7 43 [illegible]	0.44[illegible]	21 52 14.6	1.[illegible]	29 11 7.7	7 43 11.[illegible]	0.4[illegible]	21 [illegible]	[illegible]
30	7 43 [illegible]	0.4[illegible]	21 52 [illegible]	1.07	30 11 [illegible]	7 43 [illegible]	0.4[illegible]	21 [illegible]	[illegible]
31	7 43 1[illegible]	0.4[illegible]	21 [illegible]	1.[illegible]	31 11 [illegible]	7 43 1[illegible]	0.4[illegible]	21 [illegible]	[illegible]
Feb 1	7 43 4[illegible]	0.4[illegible]	21 [illegible]	1.[illegible]	1 1[illegible]	7 43 [illegible]	0.4[illegible]	21 [illegible]	[illegible]
2	7 42 [illegible]	0.4[illegible]	21 [illegible]	1.[illegible]	2 1[illegible]	7 42 [illegible]	0.4[illegible]	21 [illegible]	[illegible]
3	7 42 [illegible]	0.4[illegible]	21 [illegible]	1.[illegible]	3 1[illegible]	7 42 [illegible]	0.4[illegible]	21 [illegible]	[illegible]
4	7 42 [illegible]	0.4[illegible]	21 [illegible]	1.[illegible]	4 1[illegible]	7 42 [illegible]	0.4[illegible]	21 [illegible]	[illegible]
5	7 42 [illegible]	0.4[illegible]	21 [illegible]	1.[illegible]	5 1[illegible]	7 42 [illegible]	0.4[illegible]	21 [illegible]	[illegible]
6	7 42 1[illegible]	0.4[illegible]	21 [illegible]	[illegible]	6 1[illegible]	7 42 [illegible]	[illegible]	21 [illegible]	[illegible]
7	7 42 [illegible]	0.4[illegible]	21 [illegible]	[illegible]	7 1[illegible]	7 42 [illegible]	0.4[illegible]	21 [illegible]	[illegible]
8	7 41 [illegible]	0.4[illegible]	21 [illegible]	[illegible]	8 1[illegible]	7 41 [illegible]	[illegible]	21 [illegible]	[illegible]
9	7 41 [illegible]	[illegible]	21 [illegible]	[illegible]	9 1[illegible]	7 41 [illegible]	[illegible]	21 [illegible]	[illegible]
10	7 41 [illegible]	[illegible]	21 [illegible]	[illegible]	10 10 [illegible]	7 41 [illegible]	[illegible]	21 [illegible]	[illegible]
11	7 41 [illegible]	[illegible]	21 [illegible]	[illegible]	11 1[illegible]	7 41 [illegible]	[illegible]	21 [illegible]	[illegible]
12	7 41 [illegible]	[illegible]	21 [illegible]	[illegible]	12 1[illegible]	7 41 [illegible]	[illegible]	21 [illegible]	[illegible]
13	7 41 [illegible]	[illegible]	21 [illegible]	[illegible]	13 1[illegible]	7 41 [illegible]	[illegible]	21 [illegible]	[illegible]
14	7 4[illegible]	[illegible]	21 [illegible]	[illegible]	14 1[illegible]	7 4[illegible]	[illegible]	21 [illegible]	[illegible]
15	7 4[illegible]	[illegible]	21 [illegible]	[illegible]	15 [illegible]	7 4[illegible]	[illegible]	21 [illegible]	[illegible]
16	7 4[illegible]	[illegible]	21 [illegible]	[illegible]	16 [illegible]	7 4[illegible]	[illegible]	21 [illegible]	[illegible]
17	7 4[illegible]	[illegible]	21 [illegible]	[illegible]	17 [illegible]	7 4[illegible]	[illegible]	21 [illegible]	[illegible]
18	7 4[illegible]	[illegible]	21 [illegible]	[illegible]	18 [illegible]	7 4[illegible]	[illegible]	21 [illegible]	[illegible]
19	7 4[illegible]	[illegible]	22 [illegible]	[illegible]	19 [illegible]	7 4[illegible]	[illegible]	22 [illegible]	[illegible]
20	7 4[illegible]	[illegible]	22 [illegible]	[illegible]	20 [illegible]	7 4[illegible]	[illegible]	22 [illegible]	[illegible]
21	7 4[illegible]	[illegible]	22 [illegible]	[illegible]	21 [illegible]	7 [illegible]	[illegible]	22 [illegible]	[illegible]
22	7 [illegible]	[illegible]	22 [illegible]	[illegible]	22 [illegible]	7 [illegible]	[illegible]	22 [illegible]	[illegible]
23	7 [illegible]	[illegible]	22 [illegible]	[illegible]	23 [illegible]	7 [illegible]	[illegible]	22 [illegible]	[illegible]
24	7 [illegible]	[illegible]	22 [illegible]	[illegible]	24 [illegible]	7 [illegible]	[illegible]	22 [illegible]	[illegible]
25	7 [illegible]	[illegible]	22 [illegible]	[illegible]	[illegible]	7 [illegible]	[illegible]	22 [illegible]	[illegible]
26	7 [illegible]	[illegible]	22 [illegible]	[illegible]	[illegible]	7 [illegible]	[illegible]	22 [illegible]	[illegible]
27	7 [illegible]	[illegible]	22 [illegible]	[illegible]	[illegible]	7 [illegible]	[illegible]	22 [illegible]	[illegible]
28	7 [illegible]	[illegible]	22 [illegible]	[illegible]	[illegible]	7 [illegible]	[illegible]	22 [illegible]	[illegible]
[illegible]	7 [illegible]	[illegible]	22 [illegible]	[illegible]	[illegible]	7 [illegible]	[illegible]	22 [illegible]	[illegible]
[illegible]	7 [illegible]	[illegible]	+22 [illegible]	[illegible]	[illegible]	7 [illegible]	[illegible]	+22 [illegible]	[illegible]

Date. 1871.	FOR WASHINGTON MEAN NOON.								FOR MERIDIAN TRANSIT.										
	Apparent Right Ascension.			Diff. for 1 hour.	Apparent Declination.			Diff. for 1 hour.	Mean Time of Transit.			Apparent Right Ascension.			Diff. for 1 h. of Long.	Apparent Declination.			Diff. for 1 hour of Long.
	h	m	s	s	°	′	″	″	d	h	m	h	m	s	s	°	′	″	″
Mar. 1	7	39	4.16	-0.265	+22	2	54.5	+0.59	1	9	1.3	7	39	1.75	-0.261	+22	2	59.8	+0.57
2	7	38	57.90	0.257	22	3	8.3	0.57	2	8	57.2	7	38	55.58	0.253	22	3	13.4	0.55
3	7	38	51.83	0.249	22	3	21.7	0.55	3	8	53.2	7	38	49.61	0.245	22	3	26.6	0.53
4	7	38	45.95	0.241	22	3	34.5	0.52	4	8	49.2	7	38	43.81	0.237	22	3	39.2	0.50
5	7	38	40.26	0.233	22	3	46.9	0.50	5	8	45.2	7	38	38.21	0.229	22	3	51.4	0.48
6	7	38	34.78	0.224	22	3	58.8	0.48	6	8	41.2	7	38	32.82	0.220	22	4	3.0	0.46
7	7	38	29.50	0.216	22	4	10.1	0.46	7	8	37.1	7	38	27.63	0.212	22	4	14.2	0.44
8	7	38	24.42	0.207	22	4	21.0	0.44	8	8	33.1	7	38	22.64	0.203	22	4	24.8	0.42
9	7	38	19.55	0.199	22	4	31.3	0.42	9	8	29.1	7	38	17.85	0.195	22	4	34.9	0.40
10	7	38	14.88	0.190	22	4	41.2	0.40	10	8	25.1	7	38	13.27	0.186	22	4	44.6	0.38
11	7	38	10.42	0.181	22	4	50.5	0.38	11	8	21.1	7	38	8.90	0.177	22	4	53.7	0.36
12	7	38	6.18	0.172	22	4	59.4	0.36	12	8	17.1	7	38	4.75	0.168	22	5	2.3	0.34
13	7	38	2.15	0.163	22	5	7.7	0.33	13	8	13.1	7	38	0.81	0.159	22	5	10.4	0.32
14	7	37	58.33	0.154	22	5	15.5	0.31	14	8	9.1	7	37	57.08	0.150	22	5	18.0	0.30
15	7	37	54.73	0.145	22	5	22.7	0.29	15	8	5.1	7	37	53.56	0.141	22	5	25.1	0.28
16	7	37	51.35	0.136	22	5	29.4	0.27	16	8	1.1	7	37	50.26	0.132	22	5	31.6	0.26
17	7	37	48.19	0.127	22	5	35.6	0.25	17	7	57.1	7	37	47.18	0.123	22	5	37.6	0.23
18	7	37	45.25	0.118	22	5	41.3	0.22	18	7	53.1	7	37	44.32	0.114	22	5	43.1	0.21
19	7	37	42.53	0.109	22	5	46.5	0.20	19	7	49.1	7	37	41.68	0.105	22	5	48.0	0.19
20	7	37	40.04	0.099	22	5	51.1	0.18	20	7	45.2	7	37	39.27	0.095	22	5	52.4	0.17
21	7	37	37.77	0.090	22	5	55.2	0.16	21	7	41.2	7	37	37.08	0.086	22	5	56.3	0.15
22	7	37	35.72	0.080	22	5	58.7	0.14	22	7	37.3	7	37	35.11	0.076	22	5	59.7	0.13
23	7	37	33.90	0.071	22	6	1.7	0.11	23	7	33.3	7	37	33.36	0.067	22	6	2.5	0.10
24	7	37	32.31	0.061	22	6	4.1	0.09	24	7	29.4	7	37	31.85	0.057	22	6	4.8	0.08
25	7	37	30.95	0.052	22	6	6.1	0.07	25	7	25.4	7	37	30.56	0.048	22	6	6.6	0.06
26	7	37	29.82	0.042	22	6	7.4	0.05	26	7	21.5	7	37	29.51	0.039	22	6	7.8	0.04
27	7	37	28.92	0.033	22	6	8.3	+0.02	27	7	17.6	7	37	28.68	0.030	22	6	8.5	+0.01
28	7	37	28.25	0.023	22	6	8.6	0.00	28	7	13.6	7	37	28.08	0.020	22	6	8.6	-0.01
29	7	37	27.81	0.013	22	6	8.4	-0.02	29	7	9.7	7	37	27.71	0.010	22	6	8.2	0.03
30	7	37	27.60	-0.004	22	6	7.6	0.04	30	7	5.7	7	37	27.57	-0.001	22	6	7.3	0.05
31	7	37	27.62	+0.006	22	6	6.3	0.06	31	7	1.8	7	37	27.65	+0.009	22	6	5.8	0.07
Apr. 1	7	37	27.87	0.015	22	6	4.5	0.09	1	6	57.9	7	37	27.97	0.018	22	6	3.9	0.10
2	7	37	28.35	0.025	22	6	2.1	0.11	2	6	53.9	7	37	28.52	0.028	22	6	1.3	0.12
3	7	37	29.05	0.034	22	5	59.2	0.13	3	6	50.0	7	37	29.29	0.037	22	5	58.3	0.14
4	7	37	29.99	0.044	22	5	55.7	0.15	4	6	46.1	7	37	30.29	0.047	22	5	54.7	0.16
5	7	37	31.16	0.053	22	5	51.7	0.18	5	6	42.2	7	37	31.52	0.056	22	5	50.5	0.19
6	7	37	32.55	0.063	22	5	47.2	0.20	6	6	38.3	7	37	32.97	0.066	22	5	45.9	0.21
7	7	37	34.18	0.072	22	5	42.2	0.22	7	6	34.4	7	37	34.66	0.075	22	5	40.7	0.23
8	7	37	36.04	00.82	22	5	36.6	0.24	8	6	30.5	7	37	36.58	0.085	22	5	35.0	0.25
9	7	37	38.12	0.091	22	5	30.5	0.26	9	6	26.6	7	37	38.72	0.094	22	5	28.8	0.27
10	7	37	40.43	0.101	22	5	23.9	0.29	10	6	22.7	7	37	41.08	0.104	22	5	22.1	0.29
11	7	37	42.96	0.110	22	5	16.7	0.31	11	6	18.8	7	37	43.66	0.113	22	5	14.8	0.31
12	7	37	45.71	0.120	22	5	9.0	0.33	12	6	14.9	7	37	44.46	0.122	22	5	6.9	0.33
13	7	37	48.69	0.129	22	5	0.8	0.35	13	6	11.0	7	37	49.49	0.131	22	4	58.6	0.35
14	7	37	51.91	0.137	22	4	52.0	0.38	14	6	7.2	7	37	52.76	0.139	22	4	49.7	0.38
15	7	37	55.35	0.146	22	4	42.8	0.40	15	6	3.3	7	37	56.25	0.148	22	4	40.4	0.40
16	7	37	59.01	0.157	22	4	33.0	0.42	16	5	59.4	7	37	59.96	0.159	22	4	30.5	0.42
17	7	38	2.90	0.167	22	4	22.7	0.44	17	5	55.6	7	38	3.89	0.169	22	4	20.1	0.44
18	7	38	7.01	0.176	22	4	11.8	0.46	18	5	51.7	7	38	8.04	0.178	22	4	9.1	0.46
19	7	38	11.35	0.185	22	4	0.4	0.48	19	5	47.9	7	38	12.42	0.187	22	3	57.6	0.48
20	7	38	15.90	0.194	22	3	48.4	0.50	20	5	44.0	7	38	17.01	0.196	22	3	45.5	0.50
21	7	38	20.66	0.203	22	3	36.0	0.53	21	5	40.2	7	38	21.81	0.205	22	3	33.0	0.53
22	7	38	25.64	0.212	22	3	23.2	0.55	22	5	36.3	7	38	26.83	0.214	22	3	20.1	0.55
23	7	38	30.84	0.221	22	3	9.8	0.57	23	5	32.4	7	38	32.07	0.223	22	3	6.6	0.57
24	7	38	36.26	0.230	22	2	55.9	0.59	24	5	28.6	7	38	37.52	0.232	22	2	52.6	0.59
25	7	38	41.90	0.239	22	2	41.4	0.61	25	5	24.8	7	38	43.19	0.240	22	2	38.1	0.61
26	7	38	47.75	0.248	22	2	26.4	0.63	26	5	20.9	7	38	49.08	0.249	22	2	23.0	0.63
27	7	38	53.81	0.257	22	2	11.0	0.65	27	5	17.1	7	38	55.17	0.258	22	2	7.5	0.65
28	7	39	0.07	0.266	22	1	55.1	0.67	28	5	13.3	7	39	1.46	0.267	22	1	51.5	0.67
29	7	39	6.55	0.274	22	1	38.7	0.69	29	5	9.4	7	39	7.97	0.275	22	1	35.1	0.69
30	7	39	13.23	0.282	22	1	21.8	0.71	30	5	5.6	7	39	14.68	0.283	22	1	18.1	0.71
31	7	39	20.11	+0.291	+22	1	4.4	-0.73	31	5	1.8	7	39	21.59	+0.292	+22	1	0.7	-0.73

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	7 39 20.11	+0.291	+22 1 4.4	−0.73	1 5 1.8	7 39 21.59	+0.292	+22 1 0.7	−0.73
2	7 39 27.19	0.299	22 0 46.6	0.75	2 4 58.0	7 39 28.69	0.300	22 0 42.8	0.75
3	7 39 34.47	0.307	22 0 28.2	0.77	3 4 54.2	7 39 35.99	0.308	22 0 24.4	0.77
4	7 39 41.95	0.316	22 0 9.4	0.79	4 4 50.4	7 39 43.49	0.317	22 0 5.5	0.79
5	7 39 49.62	0.324	21 59 50.1	0.81	5 4 46.6	7 39 51.18	0.325	21 59 46.2	0.81
6	7 39 57.49	0.332	21 59 30.3	0.83	6 4 42.8	7 39 59.07	0.333	21 59 26.4	0.83
7	7 40 5.55	0.340	21 59 10.3	0.85	7 4 39.0	7 40 7.15	0.341	21 59 6.1	0.85
8	7 40 13.80	0.348	21 58 49.4	0.87	8 4 35.2	7 40 15.42	0.349	21 58 45.4	0.87
9	7 40 22.24	0.355	21 58 28.2	0.89	9 4 31.4	7 40 23.87	0.356	21 58 24.1	0.89
10	7 40 30.87	0.363	21 58 6.6	0.91	10 4 27.6	7 40 32.51	0.364	21 58 2.5	0.91
11	7 40 39.68	0.371	21 57 44.5	0.93	11 4 23.8	7 40 41.33	0.372	21 57 40.4	0.93
12	7 40 48.67	0.378	21 57 21.9	0.95	12 4 20.0	7 40 50.32	0.379	21 57 17.8	0.95
13	7 40 57.84	0.386	21 56 58.9	0.97	13 4 16.3	7 40 59.50	0.387	21 56 54.7	0.97
14	7 41 7.20	0.394	21 56 35.4	0.99	14 4 12.5	7 41 8.86	0.395	21 56 31.3	0.99
15	7 41 16.74	0.401	21 56 11.5	1.00	15 4 8.7	7 41 18.41	0.402	21 56 7.4	1.00
16	7 41 26.45	0.408	21 55 47.2	1.02	16 4 4.9	7 41 28.13	0.408	21 55 43.0	1.02
17	7 41 36.34	0.415	21 55 22.4	1.04	17 4 1.2	7 41 38.02	0.415	21 55 18.2	1.04
18	7 41 46.39	0.422	21 54 57.2	1·06	18 3 57.4	7 41 48.08	0.422	21 54 53.0	1.06
19	7 41 56.62	0.429	21 54 31.6	1.08	19 3 53.6	7 41 58.30	0.429	21 54 27.4	1.08
20	7 42 7.00	0.436	21 54 5.6	1.10	20 3 49.9	7 42 8.68	0.436	21 54 1.4	1.10
21	7 42 17.55	0.443	21 53 39.1	1.11	21 3 46.1	7 42 19.22	0.443	21 53 34.9	1.11
22	7 42 28.26	0.449	21 53 12.2	1.13	22 3 42.4	7 42 29.93	0.449	21 53 8.0	1.13
23	7 42 39.13	0.456	21 52 44.8	1.15	23 3 38.6	7 42 40.79	0.456	21 52 40.7	1.15
24	7 42 50.15	0.462	21 52 17.1	1.17	24 3 34.9	7 42 51.81	0.462	21 52 12.9	1.17
25	7 43 1.33	9.469	21 51 48.9	1.18	25 3 31.1	7 43 2.98	0.469	21 51 44.8	-1.18
26	7 43 12.66	0.475	21 51 20.4	1.20	26 3 27.4	7 43 14.30	0.475	21 51 16.2	1.20
27	7 43 24.14	0.481	21 50 51.4	1.21	27 3 23.7	7 43 25.77	0.481	21 50 47.3	1.21
28	7 43 35.77	0.487	21 50 22.1	1.23	28 3 19.9	7 43 37.39	0.487	21 50 18.0	1.23
29	7 43 47.54	0.493	21 49 52.4	1.25	29 3 16.2	7 43 49.15	0.493	21 49 48.3	1.25
30	7 43 59.46	0.499	21 49 22.3	1.26	30 3 12.5	7 44 1.06	0.499	21 49 18.3	1.26
31	7 44 11.50	0.505	21 48 51.9	1.28	31 3 8.7	7 44 13.09	0.505	21 48 47.8	1.28
June 1	7 44 23.67	0.510	21 48 21.0	1.29	1 3 5.0	7 44 25.25	0.510	21 48 17.0	1.29
2	7 44 35.98	0.516	21 47 49.8	1.31	2 3 1.3	7 44 37.54	0.516	21 47 45.8	1.31
3	7 44 48.43	0.521	21 47 18.2	1.32	3 2 57.6	7 44 49.97	0.521	21 47 14.2	1.32
4	7 45 1.00	0.526	21 46 46.2	1.34	4 2 53.8	7 45 2.53	0.526	21 46 42.3	1.34
5	7 45 13.70	0.532	21 46 13.9	1.35	5 2 50.1	7 45 15.22	0.532	21 46 10.0	1.35
6	7 45 26.52	0.537	21 45 41.2	1.37	6 2 46.4	7 45 28.02	0.537	21 45 37.4	1.37
7	7 45 39.46	0.542	21 45 8.2	1.38	7 2 42.7	7 45 40.94	0.542	21 45 4.5	1.38
8	7 45 52.51	0.546	21 44 34.9	1.40	8 2 38.9	7 45 53.98	0.546	21 44 31.2	1.40
9	7 46 5.69	0.551	21 44 1.2	1.41	9 2 35.2	7 46 7.13	0.551	21 43 57.6	1.41
10	7 46 18.98	0.556	21 43 27.2	1.42	10 2 31.5	7 46 20.39	0.556	21 43 23.6	1.42
11	7 46 32.37	0.560	21 42 52.9	1.44	11 2 27.8	7 46 33.76	0.560	21 42 49.3	1.44
12	7 46 45.88	0.565	21 42 18.2	1.45	12 2 24.1	7 46 47.24	0.565	21 42 14.7	1.45
13	7 46 59.49	0.570	21 41 43.2	1.46	13 2 20.4	7 47 0.82	0.570	21 41 39.8	1.46
14	7 47 13.20	0.574	21 41 8.0	1.48	14 2 16.7	7 47 14.51	0.574	21 41 4.6	1.48
15	7 47 27.02	0.578	21 40 32.4	1.49	15 2 13.0	7 47 28.31	0.577	21 40 29.1	1.49
16	7 47 40.93	0.582	21 39 56.5	1.50	16 2 9.3	7 47 42.19	0.581	21 39 53.3	1.50
17	7 47 54.93	0.585	21 39 20.3	1.51	17 2 5.6	7 47 56.16	0.584	21 39 17.2	1.51
18	7 48 9.02	0.589	21 38 43.9	1.52	18 2 1.9	7 48 10.22	0.588	21 38 40.8	1.52
19	7 48 23.20	0.593	21 38 7.2	1.54	19 1 58.2	7 48 24.37	0.592	21 38 4.1	1.54
20	7 48 37.46	0.596	21 37 30.2	1.55	20 1 54.5	7 48 38.60	0.595	21 37 27.2	1.55
21	7 48 51.80	0.599	21 36 52.9	1.56	21 1 50.8	7 48 52.91	0.598	21 36 50.0	1.56
22	7 49 6.23	0.603	21 36 15.3	1.57	22 1 47.1	7 49 7.31	0.602	21 36 12.5	1.57
23	7 49 20.73	0.606	21 35 37.5	1.58	23 1 43.4	7 49 21.78	0.605	21 35 34.8	1.58
24	7 49 35.31	0.609	21 34 59.5	1.59	24 1 39.7	7 49 36.33	0.608	21 34 56.8	1.59
25	7 49 49.96	0.612	21 34 21.2	1.60	25 1 36.0	7 49 50.95	0.611	21 34 18·6	1.60
26	7 50 4.68	0.615	21 33 42.7	1.61	26 1 32.4	7 50 5.63	0.614	21 33 40.2	1.61
27	7 50 19.46	0.617	21 33 3.9	1.62	27 1 28.7	7 50 20.38	0.616	21 33 1.5	1.62
28	7 50 34.30	0.620	21 32 25.0	1.63	28 1 25.0	7 50 35.19	0.619	21 32 22.7	1.63
29	7 50 49.20	0.622	21 31 45.8	1.64	29 1 21.3	7 50 50.05	0.621	21 31 43.6	1.64
30	7 51 4.16	0.624	21 31 6.4	1.65	30 1 17.6	7 51 4.97	0.623	21 31 4.3	1.65
31	7 51 19.17	+0.626	+21 30 26.8	−1.65	31 1 13.9	7 51 19.94	+0.625	+21 30 24.8	−1.65

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	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	7 51 19.17	+0.626	+21 30 26.8	-1.65	1 1 13.9	7 51 19.94	+0.625	+21 30 24.8	-1.65
2	7 51 34.23	0.628	21 29 47.0	1.66	2 1 10.2	7 51 34.97	0.627	21 29 45.1	1.66
3	7 51 49.34	0.630	21 29 7.0	1.67	3 1 6.6	7 51 50.04	0.629	21 29 5.1	1.67
4	7 52 4.50	0.632	21 28 26.8	1.68	4 1 2.9	7 52 5.16	0.631	21 28 25.0	1.68
5	7 52 19.70	0.634	21 27 46.5	1.69	5 0 59.2	7 52 20.32	0.633	21 27 44.8	1.69
6	7 52 34.94	0.636	21 27 5.9	1.69	6 0 55.5	7 52 35.52	0.635	21 27 4.4	1.69
7	7 52 50.22	0.637	21 26 25.3	1.70	7 0 51.9	7 52 50.77	0.636	21 26 23.8	1.70
8	7 53 5.53	0.638	21 25 44.4	1.70	8 0 48.2	7 53 6.04	0.637	21 25 43.1	1.70
9	7 53 20.87	0.640	21 25 3.4	1.71	9 0 44.5	7 53 21.34	0.639	21 25 2.2	1.71
10	7 53 36.24	0.641	21 24 22.3	1.72	10 0 40.8	7 53 36.67	0.640	21 24 21.2	1.72
11	7 53 51.63	0.642	21 23 41.1	1.72	11 0 37.2	7 53 52.02	0.641	21 23 40.1	1.72
12	7 54 7.06	0.643	21 22 59.7	1.73	12 0 33.5	7 54 7.41	0.642	21 22 58.7	1.73
13	7 54 22.50	0.644	21 22 18.2	1.73	13 0 29.8	7 54 22.82	0.643	21 22 17.3	1.73
14	7 54 37.97	0.645	21 21 36.5	1.74	14 0 26.1	7 54 38.25	0.643	21 21 35.7	1.74
15	7 54 53.45	0.645	21 20 54.8	1.74	15 0 22.4	7 54 53.69	0.643	21 20 54.1	1.74
16	7 55 8.94	0.645	21 20 12.9	1.75	16 0 18.8	7 55 9.14	0.643	21 20 12.4	1.75
17	7 55 24.43	0.646	21 19 31.0	1.75	17 0 15.1	7 55 24.59	0.644	21 19 30.5	1.75
18	7 55 39.93	0.646	21 18 49.0	1.75	18 0 11.4	7 55 40.05	0.644	21 18 48.6	1.75
19	7 55 55.44	0.646	21 18 6.9	1.76	19 0 7.7	7 55 55.52	0.644	21 18 6.7	1.76
20	7 56 10.94	0.646	21 17 24.7	1.76	20 0 4.1	7 56 10.98	0.644	21 17 24.6	1.76
21	7 56 26.44	0.646	21 16 42.5	1.76	21 0 0.4	7 56 26.44	0.644	21 16 42.5	1.76
					21 23 56.7	7 56 41.89	0.643	21 16 0.3	1.76
22	7 56 41.93	0.645	21 16 0.2	1.76	22 23 53.0	7 56 57.33	0.643	21 15 18.1	1.76
23	7 56 57.41	0.645	21 15 17.9	1.76	23 23 49.4	7 57 12.76	0.643	21 14 35.9	1.76
24	7 57 12.88	0.644	21 14 35.6	1.76	24 23 45.7	7 57 28.18	0.642	21 13 53.6	1.76
25	7 57 28.34	0.643	21 13 53.2	1.76	25 23 42.0	7 57 43.57	0.642	21 13 11.4	1.76
26	7 57 43.78	0.643	21 13 10.8	1.76	26 23 38.3	7 57 58.95	0.641	21 12 29.1	1.76
27	7 57 59.19	0.642	21 12 28.4	1.76	27 23 34.7	7 58 14.30	0.640	21 11 46.8	1.76
28	7 58 14.58	0.641	21 11 46.1	1.76	28 23 31.0	7 58 29.62	0.639	21 11 4.6	1.76
29	7 58 29.95	0.640	21 11 3.7	1.76	29 23 27.3	7 58 44.92	0.637	21 10 22.3	1.76
30	7 58 45.28	0.638	21 10 21.3	1.76	30 23 23.6	7 59 0.19	0.636	21 9 40.1	1.76
31	7 59 0.58	0.637	21 9 39.0	1.76	31 23 19.9	7 59 15.42	0.634	21 8 57.9	1.76
Aug. 1	7 59 15.85	0.635	21 8 56.7	1.76	1 23 16.3	7 59 30.62	0.633	21 8 15.7	1.76
2	7 59 31.08	0.634	21 8 14.4	1.76	2 23 12.6	7 59 45.77	0.631	21 7 33.6	1.75
3	7 59 46.27	0.632	21 7 32.2	1.75	3 23 8.9	8 0 0.87	0.629	21 6 51.5	1.75
4	8 0 1.41	0.630	21 6 50.0	1.75	4 23 5.2	8 0 15.94	0.627	21 6 9.5	1.75
5	8 0 16.51	0.628	21 6 7.9	1.75	5 23 1.5	8 0 30.96	0.625	21 5 27.6	1.75
6	8 0 31.56	0.626	21 5 25.9	1.75	6 22 57.9	8 0 45.92	0.623	21 4 45.8	1.74
7	8 0 46.56	0.624	21 4 44.0	1.74	7 22 54.2	8 1 0.83	0.620	21 4 4.0	1.74
8	8 1 1.50	0.621	21 4 2.1	1.74	8 22 50.5	8 1 15.68	0.618	21 3 22.4	1.74
9	8 1 16.39	0.619	21 3 20.4	1.74	9 22 46.8	8 1 30.46	0.616	21 2 40.9	1.73
10	8 1 31.21	0.616	21 2 38.8	1.73	10 22 43.1	8 1 45.20	0.613	21 1 59.5	1.73
11	8 1 45.98	0.614	21 1 57.3	1.73	11 22 39.4	8 1 59.86	0.611	21 1 18.2	1.72
12	8 2 0.68	0.612	21 1 15.9	1.72	12 22 35.7	8 2 14.46	0.607	21 0 37.1	1.72
13	8 2 15.31	0.608	21 0 34.7	1.72	13 22 32.0	8 2 28.99	0.604	20 59 56.1	1.71
14	8 2 29.87	0.605	20 59 53.6	1.71	14 22 28.3	8 2 43.45	0.601	20 59 15.3	1.71
15	8 2 44.36	0.602	20 59 12.7	1.71	15 22 24.6	8 2 57.83	0.598	20 58 34.6	1.70
16	8 2 58.77	0.599	20 58 31.9	1.70	16 22 21.0	8 3 12.12	0.594	20 57 54.1	1.69
17	8 3 13.09	0.595	20 57 51.4	1.69	17 22 17.3	8 3 26.33	0.591	20 57 13.8	1.68
18	8 3 27.34	0.592	20 57 11.0	1.68	18 22 13.6	8 3 40.45	0.587	20 56 33.7	1.67
19	8 3 41.49	0.588	20 56 30.8	1.67	19 22 9.9	8 3 54.49	0.583	20 55 53.8	1.66
20	8 3 55.56	0.584	20 55 50.8	1.66	20 22 6.2	8 4 8.43	0.579	20 55 14.1	1.65
21	8 4 9.53	0.580	20 55 11.0	1.65	21 22 2.5	8 4 22.27	0.575	20 54 34.7	1.64
22	8 4 23.41	0.576	20 54 31.4	1.64	22 21 58.8	8 4 36.02	0.571	20 53 55.4	1.63
23	8 4 37.18	0.572	20 53 52.1	1.63	23 21 55.1	8 4 49.68	0.567	20 53 16.4	1.62
24	8 4 50.86	0.568	20 53 13.0	1.62	24 21 51.4	8 5 3.24	0.562	20 52 37.7	1.61
25	8 5 4.44	0.563	20 52 34.2	1.61	25 21 47.7	8 5 16.68	0.558	20 51 59.2	1.60
26	8 5 17.91	0.559	20 51 55.7	1.60	26 21 43.9	8 5 30.02	0.553	20 51 21.0	1.59
27	8 5 31.28	0.554	20 51 17.4	1.59	27 21 40.2	8 5 43.25	0.549	20 50 43.0	1.58
28	8 5 44.53	0.550	20 50 39.4	1.58	28 21 36.5	8 5 56.37	0.544	20 50 5.4	1.56
29	8 5 57.67	0.545	20 50 1.7	1.56	29 21 32.8	8 6 9.37	0.539	20 49 28.1	1.55
30	8 6 10.69	0.540	20 49 24.3	1.55	30 21 29.1	8 6 22.26	0.534	20 48 51.1	1.54
31	8 6 23.60	+0.535	+20 48 47.2	-1.54	31 21 25.4	8 6 35.02	+0.529	+20 48 14.3	-1.52

URANUS, 1871.

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	iff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	8 6 36.38	+0.530	+20 48 10.4	−1.52	1 21 21.6	8 6 47.67	+0.524	+20 47 38.0	−1.51
2	8 6 49.05	0.525	20 47 34.0	1.51	2 21 17.9	8 7 0.19	0.519	20 47 1.9	1.50
3	8 7 1.59	0.520	20 46 57.9	1.50	3 21 14.2	8 7 12.59	0.514	20 46 26.2	1.48
4	8 7 14.00	0.515	20 46 22.1	1.48	4 21 10.5	8 7 24.86	0.509	20 45 50.8	1.47
5	8 7 26.28	0.509	20 45 46.7	1.47	5 21 6.7	8 7 36.99	0.503	20 45 15.8	1.45
6	8 7 38.43	0.503	20 45 11.7	1.45	6 21 3.0	8 7 48.98	0.497	20 44 41.2	1.43
7	8 7 50.43	0.497	20 44 37.0	1.43	7 20 59.3	8 8 0.83	0.491	20 44 7.0	1.42
8	8 8 2.30	0.491	20 44 2.8	1.42	8 20 55.5	8 8 12.54	0.486	20 43 33.2	1.40
9	8 8 14.03	0.486	20 43 28.9	1.40	9 20 51.8	8 8 24.12	0.480	20 42 59.8	1.38
10	8 8 25.62	0.480	20 42 55.4	1.38	10 20 48.1	8 8 35.54	0.473	20 42 26.8	1.37
11	8 8 37.05	0.473	20 42 22.4	1.37	11 20 44.3	8 8 46.82	0.467	20 41 54.2	1.35
12	8 8 48.34	0.467	20 41 49.8	1.35	12 20 40.6	8 8 57.94	0.461	20 41 22.0	1.33
13	8 8 59.47	0.461	20 41 17.6	1.33	13 20 36.8	8 9 8.92	0.454	20 40 50.3	1.31
14	8 9 10.45	0.454	20 40 45.8	1.31	14 20 33.1	8 9 19.74	0.448	20 40 19.0	1.29
15	8 9 21.28	0.448	20 40 14.6	1.29	15 20 29.3	8 9 30.40	0.441	20 39 48.2	1.27
16	8 9 31.94	0.441	20 39 43.7	1.27	16 20 25.6	8 9 40.90	0.434	20 39 17.8	1.25
17	8 9 42.45	0.434	20 39 13.4	1.25	17 20 21.8	8 9 51.24	0.427	20 38 48.0	1.23
18	8 9 52.79	0.427	20 38 43.5	1.23	18 20 18.0	8 10 1.42	0.420	20 38 18.6	1.21
19	8 10 2.97	0.420	20 38 14.1	1.21	19 20 14.3	8 10 11.43	0.413	20 37 49.7	1.19
20	8 10 12.98	0.413	20 37 45.2	1.19	20 20 10.5	8 10 21.26	0.406	20 37 21.3	1.17
21	8 10 22.81	0.406	20 37 16.9	1.17	21 20 6.7	8 10 30.93	0.399	20 36 53.4	1.15
22	8 10 32.47	0.399	20 36 49.0	1.15	22 20 3.0	8 10 40.42	0.391	20 36 26.1	1.13
23	8 10 41.96	0.391	20 36 21.6	1.13	23 19 59.2	8 10 49.73	0.384	20 35 59.2	1.11
24	8 10 51.27	0.384	20 35 54.8	1.11	24 19 55.4	8 10 58.87	0.377	20 35 32.9	1.08
25	8 11 0.40	0.377	20 35 28.5	1.08	25 19 51.7	8 11 7.82	0.369	20 35 7.1	1.06
26	8 11 9.35	0.369	20 35 2.8	1.06	26 19 47.9	8 11 16.59	0.361	20 34 41.9	1.04
27	8 11 18.11	0.361	20 34 37.6	1.04	27 19 44.1	8 11 25.18	0.353	20 34 17.3	1.02
28	8 11 26.69	0.353	20 34 13.0	1.02	28 19 40.3	8 11 33.58	0.346	20 33 53.2	0.99
29	8 11 35.08	0.346	20 33 48.9	0.99	29 19 36.5	8 11 41.79	0.338	20 33 29.7	0.96
30	8 11 43.28	0.338	20 33 25.4	0.96	30 19 32.7	8 11 49.82	0.330	20 33 6.8	0.94
Oct. 1	8 11 51.29	0.330	20 33 2.6	0.94	1 19 28.9	8 11 57.65	0.322	20 32 44.4	0.92
2	8 11 59.11	0.322	20 32 40.3	0.92	2 19 25.1	8 12 5.28	0.314	20 32 22.7	0.89
3	8 12 6.73	0.314	20 32 18.6	0.89	3 19 21.2	8 12 12.73	0.306	20 32 1.5	0.86
4	8 12 14.16	0.305	20 31 57.5	0.86	4 19 17.4	8 12 19.98	0.298	20 31 41.0	0.83
5	8 12 21.39	0.297	20 31 37.0	0.83	5 19 13.6	8 12 27.03	0.289	20 31 21.1	0.81
6	8 12 28.42	0.288	20 31 17.2	0.81	6 19 9.8	8 12 33.87	0.281	20 31 1.7	0.79
7	8 12 35.24	0.280	20 30 57.9	0.79	7 19 6.0	8 12 40.52	0.272	20 30 43.1	0.76
8	8 12 41.86	0.271	20 30 39.3	0.76	8 19 2.1	8 12 46.97	0.264	20 30 25.0	0.73
9	8 12 48.28	0.263	20 30 21.4	0.73	9 18 58.3	8 12 53.21	0.255	20 30 7.7	0.71
10	8 12 54.49	0.254	20 30 4.1	0.70	10 18 54.5	8 12 59.23	0.246	20 29 51.0	0.68
11	8 13 0.49	0.245	20 29 47.5	0.68	11 18 50.6	8 13 5.05	0.238	20 29 34.9	0.66
12	8 13 6.27	0.237	20 29 31.6	0.65	12 18 46.8	8 13 10.65	0.229	20 29 19.5	0.62
13	8 13 11.84	0.228	20 29 16.3	0.62	13 18 43.0	8 13 16.04	0.220	20 29 4.8	0.60
14	8 13 17.20	0.219	20 29 1.7	0.60	14 18 39.1	8 13 21.22	0.211	20 28 50.7	0.58
15	8 13 22.35	0.210	20 28 47.7	0.57	15 18 35.3	8 13 26.19	0.201	20 28 37.3	0.55
16	8 13 27.28	0.200	20 28 34.4	0.54	16 18 31.4	8 13 30.94	0.191	20 28 24.6	0.52
17	8 13 32.00	0.190	20 28 21.8	0.51	17 18 27.6	8 13 35.49	0.182	20 28 12.5	0.49
18	8 13 36.50	0.181	20 28 9.9	0.48	18 18 23.7	8 13 39.80	0.174	20 28 1.1	0.46
19	8 13 40.77	0.173	20 27 58.6	0.45	19 18 19.8	8 13 43.89	0.165	20 27 50.5	0.43
20	8 13 44.82	0.164	20 27 48.1	0.42	20 18 16.0	8 13 47.76	0.156	20 27 40.5	0.40
21	8 13 48.65	0.155	20 27 38.3	0.40	21 18 12.1	8 13 51.42	0.147	20 27 31.2	0.38
22	8 13 52.26	0.146	20 27 29.1	0.37	22 18 8.2	8 13 54.86	0.138	20 27 22.7	0.35
23	8 13 55.65	0.136	20 27 20.7	0.34	23 18 4.3	8 13 58.07	0.129	20 27 14.8	0.32
24	8 13 58.81	0.127	20 27 13.0	0.31	24 18 0.4	8 14 1.05	0.120	20 27 7.6	0.29
25	8 14 1.75	0.118	20 27 6.0	0.28	25 17 56.6	8 14 3.81	0.110	20 27 1.2	0.26
26	8 14 4.46	0.108	20 26 59.7	0.25	26 17 52.7	8 14 6.35	0.101	20 26 55.4	0.23
27	8 14 6.95	0.099	20 26 54.1	0.22	27 17 48.8	8 14 8.66	0.092	20 26 50.3	0.20
28	8 14 9.21	0.090	20 26 49.2	0.19	28 17 44.9	8 14 10.74	0.082	20 26 46.0	0.17
29	8 14 11.24	0.080	20 26 45.0	0.16	29 17 41.0	8 14 12.60	0.072	20 26 42.4	0.14
30	8 14 13.05	0.070	20 26 41.6	0.13	30 17 37.1	8 14 14.23	0.063	20 26 39.6	0.11
31	8 14 14.62	0.061	20 26 39.0	0.10	31 17 33.1	8 14 15.64	0.053	20 26 37.5	0.08
32	8 14 15.97	+0.051	+20 26 37.0	−0.07	32 17 29.2	8 14 16.82	+0.044	+20 26 36.1	−0.05

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	8 14 15.97	+0.051	+20 26 37.0	−0.07	1 17 29.2	8 14 16.82	+0.044	+20 26 36.1	−0.05
2	8 14 17.09	0.042	20 26 35.8	−0.03	2 17 25.3	8 14 17.77	0.034	20 26 35.4	−0.01
3	8 14 17.98	0.032	20 26 35.3	0.00	3 17 21.4	8 14 18.49	0.025	20 26 35.4	+0.02
4	8 14 18.64	0.023	20 26 35.5	+0.02	4 17 17.4	8 14 18.98	0.015	20 26 36.1	0.04
5	8 14 19.07	0.013	20 26 36.5	0.05	5 17 13.5	8 14 19.25	+0.006	20 26 37.6	0.07
6	8 14 19.28	+0.004	20 26 38.1	0.08	6 17 9.6	8 14 19.28	−0.004	20 26 39.8	0.10
7	8 14 19.25	−0.006	20 26 40.5	0.11	7 17 5.7	8 14 19.10	0.013	20 26 42.6	0.13
8	8 14 19.00	0.015	20 26 43.6	0.14	8 17 1.7	8 14 18.68	0.022	20 26 46.3	0.17
9	8 14 18.51	0.025	20 26 47.5	0.18	9 16 57.8	8 14 18.03	0.032	20 26 50.7	0.20
10	8 14 17.79	0.035	20 26 52.1	0.21	10 16 53.8	8 14 17.15	0.042	20 26 55.8	0.23
11	8 14 16.84	0.044	20 26 57.4	0.24	11 16 49.9	8 14 16.05	0.051	20 27 1.5	0.26
12	8 14 15.67	0.054	20 27 3.4	0.27	12 16 45.9	8 14 14.72	0.060	20 27 8.0	0.29
13	8 14 14.27	0.063	20 27 10.1	0.30	13 16 42.0	8 14 13.16	0.070	20 27 15.2	0.31
14	8 14 12.64	0.072	20 27 17.5	0.32	14 16 38.0	8 14 11.37	0.079	20 27 23.1	0.34
15	8 14 10.78	0.081	20 27 25.6	0.35	15 16 34.0	8 14 9.37	0.088	20 27 31.7	0.37
16	8 14 8.70	0.091	20 27 34.5	0.38	16 16 30.1	8 14 7.15	0.097	20 27 40.9	0.40
17	8 14 6.40	0.100	20 27 44.0	0.41	17 16 26.1	8 14 4.71	0.107	20 27 50.9	0.43
18	8 14 3.88	0.110	20 27 54.2	0.44	18 16 22.1	8 14 2.04	0.116	20 28 1.6	0.46
19	8 14 1.13	0.119	20 28 5.1	0.47	19 16 18.2	8 13 59.15	0.125	20 28 13.0	0.49
20	8 13 58.16	0.128	20 28 16.8	0.50	20 16 14.2	8 13 56.04	0.134	20 28 25.0	0.52
21	8 13 54.97	0.137	20 28 29.1	0.53	21 16 10.2	8 13 52.71	0.143	20 28 37.7	0.54
22	8 13 51.56	0.146	20 28 42.0	0.55	22 16 6.2	8 13 49.17	0.152	20 28 51.1	0.57
23	8 13 47.94	0.155	20 28 55.6	0.58	23 16 2.2	8 13 45.41	0.161	20 29 5.1	0.60
24	8 13 44.10	0.164	20 29 9.9	0.61	24 15 58.2	8 13 41.45	0.170	20 29 19.8	0.63
25	8 13 40.05	0.173	20 29 24.8	0.64	25 15 54.2	8 13 37.27	0.179	20 29 35.1	0.65
26	8 13 35.79	0.182	20 29 40.4	0.66	26 15 50.2	8 13 32.89	0.187	20 29 51.0	0.68
27	8 13 31.32	0.190	20 29 56.6	0.69	27 15 46.2	8 13 28.29	0.196	20 30 7.6	0.70
28	8 13 26.64	0.199	20 30 13.4	0.71	28 15 42.2	8 13 23.48	0.205	20 30 24.8	0.72
29	8 13 21.75	0.208	20 30 30.9	0.73	29 15 38.2	8 13 18.47	0.213	20 30 42.6	0.75
30	8 13 16.66	0.216	20 30 49.0	0.77	30 15 34.2	8 13 13.25	0.222	20 31 1.1	0.78
Dec. 1	8 13 11.36	0.225	20 31 7.7	0.79	1 15 30.1	8 13 7.84	0.230	20 31 20.1	0.81
2	8 13 5.87	0.233	20 31 27.0	0.82	2 15 26.1	8 13 2.25	0.238	20 31 39.7	0.83
3	8 13 0.18	0.241	20 31 46.9	0.84	3 15 22.1	8 12 56.45	0.246	20 31 59.9	0.85
4	8 12 54.30	0.249	20 32 7.4	0.86	4 15 18.0	8 12 50.46	0.254	20 32 20.7	0.88
5	8 12 48.22	0.257	20 32 28.4	0.89	5 15 14.0	8 12 44.29	0.262	20 32 41.9	0.90
6	8 12 41.96	0.265	20 32 49.9	0.91	6 15 10.0	8 12 37.92	0.270	20 33 3.8	0.92
7	8 12 35.50	0.273	20 33 12.0	0.93	7 15 5.9	8 12 31.37	0.278	20 33 26.2	0.95
8	8 12 28.86	0.281	20 33 34.7	0.96	8 15 1.9	8 12 24.63	0.285	20 33 49.2	0.97
9	8 12 22.03	0.288	20 33 58.0	0.98	9 14 57.9	8 12 17.70	0.293	20 34 12.7	0.99
10	8 12 15.02	0.296	20 34 21.7	1.00	10 14 53.8	8 12 10.61	0.300	20 34 36.7	1.01
11	8 12 7.84	0.303	20 34 46.0	1.02	11 14 49.8	8 12 3.33	0.307	20 35 1.2	1.03
12	8 12 0.48	0.310	20 35 10.8	1.04	12 14 45.7	8 11 55.88	0.314	20 35 26.2	1.05
13	8 11 52.95	0.317	20 35 36.0	1.06	13 14 41.6	8 11 48.28	0.321	20 35 51.6	1.07
14	8 11 45.26	0.324	20 36 1.7	1.08	14 14 37.6	8 11 40.50	0.328	20 36 17.6	1.09
15	8 11 37.40	0.331	20 36 27.9	1.10	15 14 33.5	8 11 32.57	0.335	20 36 43.9	1.11
16	8 11 29.38	0.337	20 36 54.5	1.12	16 14 29.4	8 11 24.48	0.341	20 37 10.7	1.12
17	8 11 21.20	0.344	20 37 21.5	1.13	17 14 25.4	8 11 16.24	0.347	20 37 37.9	1.14
18	8 11 12.88	0.350	20 37 48.9	1.15	18 14 21.3	8 11 7.84	0.353	20 38 5.5	1.16
19	8 11 4.40	0.356	20 38 16.8	1.17	19 14 17.2	8 10 59.30	0.359	20 38 33.6	1.18
20	8 10 55.78	0.362	20 38 45.1	1.19	20 14 13.1	8 10 50.62	0.365	20 39 2.0	1.19
21	8 10 47.01	0.368	20 39 13.7	1.20	21 14 9.1	8 10 41.80	0.371	20 39 30.8	1.21
22	8 10 38.12	0.374	20 39 42.7	1.22	22 14 5.0	8 10 32.85	0.377	20 39 59.9	1.23
23	8 10 29.09	0.379	20 40 12.0	1.23	23 14 0.9	8 10 23.77	0.382	20 40 29.3	1.24
24	8 10 19.93	0.384	20 40 41.7	1.24	24 13 56.8	8 10 14.57	0.387	20 40 59.1	1.25
25	8 10 10.65	0.389	20 41 11.7	1.26	25 13 52.7	8 10 5.25	0.392	20 41 29.2	1.26
26	8 10 1.25	0.394	20 41 42.0	1.27	26 13 48.6	8 9 55.81	0.397	20 41 59.6	1.27
27	8 9 51.74	0.399	20 42 12.6	1.28	27 13 44.6	8 9 46.25	0.401	20 42 30.3	1.28
28	8 9 42.11	0.403	20 42 43.5	1.29	28 13 40.5	8 9 36.58	0.406	20 43 1.2	1.29
29	8 9 32.36	0.408	20 43 14.6	1.30	29 13 36.4	8 9 26.80	0.410	20 43 32.4	1.30
30	8 9 22.52	0.412	20 43 45.9	1.31	30 13 32.3	8 9 16.93	0.414	20 44 3.7	1.31
31	8 9 12.58	0.416	20 44 17.5	1.32	31 13 28.2	8 9 6.97	0.418	20 44 35.3	1.32
32	8 9 2.55	−0.419	+20 44 49.3	+1.33	32 13 24.1	8 8 56.93	−0.422	+20 45 7.1	+1.33

NEPTUNE, 1871.

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 1	1 12 46.59	+0.009	+5 53 26.7	+0.20	1 6 28.1	1 12 46.65	+0.010	+5 53 28.1	+0.21
2	1 12 46.86	0.014	5 53 32.0	0.23	2 6 24.2	1 12 46.96	0.016	5 53 33.5	0.24
3	1 12 47.27	0.020	5 53 38.1	0.27	3 6 20.3	1 12 47.40	0.021	5 53 39.8	0.28
4	1 12 47 81	0.025	5 53 44.9	0.30	4 6 16.4	1 12 47.97	0.026	5 53 46.8	0.31
5	1 12 48.47	0.030	5 53 52.5	0.33	5 6 12.4	1 12 48.67	0.032	5 53 54.6	0.34
6	1 12 49.26	0.036	5 54 0.9	0.37	6 6 8.5	1 12 49.49	0.037	5 54 3.2	0.38
7	1 12 50.18	0.041	5 54 10.1	0.40	7 6 4.6	1 12 50.43	0.042	5 54 12.6	0.41
8	1 12 51.23	0.046	5 54 20.1	0.43	8 6 0.7	1 12 51.51	0.048	5 54 22.8	0.44
9	1 12 52.41	0.052	5 54 30.9	0.47	9 5 56.8	1 12 52.72	0.053	5 54 33.7	0.48
10	1 12 53.72	0.057	5 54 42.4	0.50	10 5 52.8	1 12 54.06	0.058	5 54 45.4	0.51
11	1 12 55.16	0.063	5 54 54.7	0.53	11 5 48.9	1 12 55.53	0.064	5 54 57.9	0.54
12	1 12 56.73	0.068	5 55 7.8	0.56	12 5 45.0	1 12 57.13	0.069	5 55 11.1	0.57
13	1 12 58.43	0.073	5 55 21.7	0.60	13 5 41.1	1 12 58.85	0.074	5 55 25.1	0.61
14	1 13 0.26	0.079	5 55 36.4	0.63	14 5 37.2	1 13. 0.70	0.080	5 55 40.0	0.64
15	1 13 2.21	0.084	5 55 51.9	0.66	15 5 33.3	1 13 2.68	0.085	5 55 55.6	0.67
16	1 13 4.29	0.089	5 56 8.1	0.69	16 5 29.4	1 13 4.79	0.090	5 56 11.9	0.70
17	1 13 6.50	0.095	5 56 25.1	0.72	17 5 25.5	1 13 7.02	0.096	5 56 29.0	0.73
18	1 13 8.84	0.100	5 56 42.8	0.75	18 5 21.6	1 13 9.38	0.101	5 56 46.9	0.76
19	1 13 11.30	0.105	5 57 1.3	0.79	19 5 17.7	1 13 11.86	0.106	5 57 5.5	0.80
20	1 13 13.89	0.111	5 57 20.5	0.82	20 5 13.8	1 13 14.47	0.112	5 57 24.8	0.83
21	1 13 16.61	0.116	5 57 40.5	0.85	21 5 9.9	1 13 17.21	0.117	5 57 44.9	0.86
22	1 13 19.45	0.121	5 58 1.3	0.88	22 5 6.0	1 13 20.07	0.122	5 58 5.8	0.89
23	1 13 22.42	0.126	5 58 22.8	0.91	23 5 2.1	1 13 23.05	0.127	5 58 27.4	0.92
24	1 13 25.51	0.131	5 58 45.0	0.94	24 4 58.2	1 13 26.16	0.132	5 58 49.7	0.95
25	1 13 28 72	0.136	5 59 7.9	0.97	25 4 54.4	1 13 29.39	0.137	5 59 12.7	0.98
26	1 13 32.05	0.141	5 59 31.5	1.00	26 4 50.5	1 13 32.73	0.142	5 59 36.4	1.01
27	1 13 35.50	0.146	5 59 55.9	1.03	27 4 46.7	1 13 36.20	0.147	6 0 0.8	1.04
28	1 13 39.08	0.151	6 0 21.0	1.06	28 4 42.8	1 13 39.79	0.152	6 0 26.0	1.07
29	1 13 42.78	0.156	6 0 46.8	1.09	29 4 38.9	1 13 43.50	0.157	6 0 51.9	1.10
30	1 13 46.59	0.161	6 1 13.3	1.12	30 4 35.1	1 13 47.33	0.162	6 1 18.5	1.13
31	1 13 50.52	0.166	6 1 40.5	1.15	31 4 31.2	1 13 51.27	0.167	6 1 45.7	1.15
Feb. 1	1 13 54.56	0.171	6 2 8.3	1.17	1 4 27.3	1 13 55.32	0.172	6 2 13.5	1.18
2	1 13 58.72	0.176	6 2 36.8	1.20	2 4 23.5	1 13 59.49	0.177	6 2 42.0	1.21
3	1 14 2.99	0.180	6 3 5.9	1.23	3 4 19.6	1 14 3.77	0.181	6 3 11.2	1.23
4	1 14 7.37	0.185	6 3 35.7	1.25	4 4 15.7	1 14 8.16	0.186	6 3 41.0	1.26
5	1 14 11.86	0.190	6 4 6.1	1.28	5 4 11.9	1 14 12.66	0.191	6 4 11.5	1.29
6	1 14 16.47	0.194	6 4 37.2	1.31	6 4 8.0	1 14 17.27	0.195	6 4 42.6	1.31
7	1 14 21.19	0.199	6 5 8.9	1.33	7 4 4.2	1 14 21.99	0.200	6 5 14.3	1.33
8	1 14 26.01	0.203	6 5 41.2	1.36	8 4 0.3	1 14 26.82	0.204	6 5 46.6	1.36
9	1 14 30.94	0.208	6 6 14.1	1.38	9 3 56.5	1 14 31.76	0.209	6 6 19.5	1.38
10	1 14 35.98	0.212	6 6 47.7	1.41	10 3 52.7	1 14 36.80	0.213	6 6 53.1	1.41
11	1 14 41.12	0.216	6 7 21.8	1.43	11 3 48.8	1 14 41.95	0.217	6 7 27.2	1.43
12	1 14 46.37	0.221	6 7 56.5	1.46	12 3 45.0	1 14 47.20	0.222	6 8 1.9	1.46
13	1 14 51.72	0.225	6 8 31.8	1.48	13 3 41.2	1 14 52.55	0.226	6 8 37.2	1.48
14	1 14 57.16	0.229	6 9 7.7	1.51	14 3 37.3	1 14 58.00	0.230	6 9 13.1	1.51
15	1 15 2.71	0.233	6 9 44.1	1.53	15 3 33.5	1 15 3.54	0.234	6 9 49.5	1.53
16	1 15 8.35	0.237	6 10 21.1	1.55	16 3 29.7	1 15 9.18	0.238	6 10 26.5	1.55
17	1 15 14.09	0.241	6 10 58.6	1.57	17 3 25.8	1 15 14.92	0.242	6 11 4.0	1.57
18	1 15 19.93	0.245	6 11 36.6	1.60	18 3 22.0	1 15 20.76	0.246	6 11 42.0	1.60
19	1 15 25.87	0.249	6 12 15.2	1.62	19 3 18.1	1 15 26.69	0.250	6 12 20.5	1.62
20	1 15 31.90	0.253	6 12 54.3	1.64	20 3 14.3	1 15 32.71	0.254	6 12 59.6	1.64
21	1 15 38.02	0.257	6 13 33.9	1.66	21 3 10.4	1 15 38.83	0.258	6 13 39.2	1.66
22	1 15 44.23	0.261	6 14 14.0	1.68	22 3 6.6	1 15 45.04	0.262	6 14 19.3	1.68
23	1 15 50.53	0.264	6 14 54.6	1.70	23 3 2.7	1 15 51.33	0.265	6 14 59.8	1.70
24	1 15 56.91	0.268	6 15 35.6	1.72	24 2 58.9	1 15 57.70	0.268	6 15 40.7	1.72
25	1 16 3.37	0.271	6 16 17.1	1.74	25 2 55.1	1 16 4.16	0.271	6 16 22.2	1.74
26	1 16 9.92	0.275	6 16 59.1	1.76	26 2 51.3	1 16 10.70	0.275	6 17 4.1	1.76
27	1 16 16.55	0.278	6 17 41.5	1.77	27 2 47.4	1 16 17.33	0.278	6 17 46.4	1.77
28	1 16 23.26	0.281	6 18 24.3	1.79	28 2 43.6	1 16 24.03	0.281	6 18 29.1	1.79
29	1 16 30.05	+0.284	+6 19 7.5	+1.81	29 2 39.8	1 16 30.81	+0.284	+6 19 12.3	+1.81

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	1 16 30.05	+0.284	+6 19 7.5	+1.81	1 2 39.8	1 16 30.81	+0.284	+6 19 12.3	+1.81
2	1 16 36.91	0.288	6 19 51.1	1.83	2 2 36.0	1 16 37.66	0.288	6 19 55.9	1.83
3	1 16 43.85	0.291	6 20 35.1	1.84	3 2 32.2	1 16 44.59	0.291	6 20 39.8	1.84
4	1 16 50.86	0.294	6 21 19.5	1.86	4 2 28.4	1 16 51.59	0.294	6 21 24.1	1.86
5	1 16 57.94	0.297	6 22 4.3	1.87	5 2 24.6	1 16 58.66	0.297	6 22 8.8	1.87
6	1 17 5.10	0.299	6 22 49.4	1.89	6 2 20.7	1 17 5.80	0.299	6 22 53.8	1.89
7	1 17 12.32	0.302	6 23 34.9	1.90	7 2 16.9	1 17 13.01	0.302	6 23 39.2	1.90
8	1 17 19.61	0.305	6 24 20.7	1.92	8 2 13.1	1 17 20.28	0.305	6 24 24.9	1.92
9	1 17 26.96	0.308	6 25 6.8	1.93	9 2 9.3	1 17 27.62	0.308	6 25 11.0	1.93
10	1 17 34.37	0.310	6 25 53.3	1.94	10 2 5.5	1 17 35.02	0.310	6 25 57.4	1.94
11	1 17 41.85	0.313	6 26 40.1	1.95	11 2 1.7	1 17 42.48	0.313	6 26 44.1	1.95
12	1 17 49.38	0.315	6 27 27.2	1.97	12 1 57.9	1 17 50.00	0.315	6 27 31.1	1.97
13	1 17 56.97	0.318	6 28 14.6	1.98	13 1 54.1	1 17 57.58	0.318	6 28 18.4	1.98
14	1 18 4.62	0.320	6 29 2.2	1.99	14 1 50.3	1 18 5.21	0.320	6 29 5.9	1.99
15	1 18 12.33	0.322	6 29 50.1	2.00	15 1 46.5	1 18 12.90	0.322	6 29 53.6	2.00
16	1 18 20.09	0.324	6 30 38.2	2.01	16 1 42.7	1 18 20.64	0.324	6 30 41.6	2.01
17	1 18 27.90	0.326	6 31 26.6	2.02	17 1 38.9	1 18 28.43	0.326	6 31 29.9	2.02
18	1 18 35.76	0.328	6 32 15.2	2.03	18 1 35.1	1 18 36.28	0.328	6 32 18.5	2.03
19	1 18 43.67	0.330	6 33 4.1	2.04	19 1 31.3	1 18 44.17	0.330	6 33 7.3	2.04
20	1 18 51.62	0.332	6 33 53.2	2.05	20 1 27.5	1 18 52.10	0.332	6 33 56.2	2.05
21	1 18 59.61	0.334	6 34 42.4	2.06	21 1 23.7	1 19 0.08	0.334	6 34 45.3	2.06
22	1 19 7.65	0.336	6 35 31.8	2.06	22 1 19.9	1 19 8.10	0.336	6 35 34.6	2.06
23	1 19 15.73	0.337	6 36 21.4	2.07	23 1 16.1	1 19 16.16	0.337	6 36 24.1	2.07
24	1 19 23.84	0.339	6 37 11.2	2.08	24 1 12.3	1 19 24.25	0.339	6 37 13.7	2.08
25	1 19 31.99	0.340	6 38 1.1	2.08	25 1 8.5	1 19 32.38	0.340	6 38 3.5	2.08
26	1 19 40.18	0.342	6 38 51.1	2.09	26 1 4.7	1 19 40.54	0.342	6 38 53.4	2.09
27	1 19 48.40	0.343	6 39 41.3	2.09	27 1 0.9	1 19 48.74	0.343	6 39 43.4	2.09
28	1 19 56.65	0.344	6 40 31.6	2.10	28 0 57.1	1 19 56.97	0.344	6 40 33.6	2.10
29	1 20 4.92	0.345	6 41 22.0	2.10	29 0 53.3	1 20 5.23	0.345	6 41 23.8	2.10
30	1 20 13.22	0.346	6 42 12.4	2.10	30 0 49.5	1 20 13.51	0.346	6 42 14.1	2.10
31	1 20 27.54	0.347	6 43 2.9	2.11	31 0 45.7	1 20 21.81	0.347	6 43 4.5	2.11
Apr. 1	1 20 29.89	0.348	6 43 53.5	2.11	1 0 41.9	1 20 30.13	0.348	6 43 55.0	2.11
2	1 20 38.26	0.349	6 44 44.2	2.11	2 0 38.1	1 20 38.48	0.349	6 44 45.5	2.11
3	1 20 46.64	0.350	6 45 34.9	2.11	3 0 34.3	1 20 46.84	0.350	6 45 36.1	2.11
4	1 20 55.04	0.350	6 46 25.6	2.11	4 0 30.5	1 20 55.22	0.350	6 46 26.7	2.11
5	1 21 3.47	0.351	6 47 16.3	2.11	5 0 26.7	1 21 3.62	0.351	6 47 17.2	2.11
6	1 21 11.91	0.352	6 48 7.0	2.11	6 0 22.9	1 21 12.04	0.352	6 48 7.8	2.11
7	1 21 20.35	0.352	6 48 57.7	2.11	7 0 19.1	1 21 20.47	0.352	6 48 58.4	2.11
8	1 21 28.81	0.353	6 49 48.4	2.11	8 0 15.3	1 21 28.90	0.353	6 49 48.9	2.11
9	1 21 37.27	0.353	6 50 39.1	2.11	9 0 11.5	1 21 37.34	0.353	6 50 39.5	2.11
10	1 21 45.73	0.353	6 51 29.8	2.11	10 0 7.8	1 21 45.78	0.353	6 51 30.1	2.11
11	1 21 54.20	0.353	6 52 20.4	2.11	11 0 4.0	1 21 54.23	0.353	6 52 20.5	2.11
12	1 22 2.68	0.353	6 53 11.0	2.11	12 0 0.2	1 22 2.68	0.353	6 53 11.0	2.11
					12 23 56.4	1 22 11.14	0.353	6 54 1.4	2.10
13	1 22 11.16	0.353	6 54 1.5	2.10	13 23 52.6	1 22 19.60	0.353	6 54 51.7	2.10
14	1 22 19.64	0.353	6 54 51.9	2.10	14 23 48.8	1 22 28.05	0.353	6 55 41.9	2.10
15	1 22 28.12	0.353	6 55 42.3	2.10	15 23 45.0	1 22 36.50	0.353	6 56 32.0	2.09
16	1 22 36.59	0.353	6 56 32.5	2.09	16 23 41.2	1 22 44.95	0.353	6 57 22.0	2.09
17	1 22 45.06	0.353	6 57 22.6	2.09	17 23 37.4	1 22 53.39	0.352	6 58 11.8	2.08
18	1 22 53.52	0.352	6 58 12.6	2.08	18 23 33.6	1 23 1 81	0.352	6 59 1.6	2.07
19	1 23 1.96	0.352	6 59 2.5	2.07	19 23 29.9	1 23 10.22	0.351	6 59 51.3	2.07
20	1 23 10.39	0.351	6 59 52.3	2.07	20 23 26.1	1 23 18.61	0.350	7 0 40.8	2.06
21	1 23 18.81	0.350	7 0 41.9	2.06	21 23 22.3	1 23 26.99	0.350	7 1 30.0	2.05
22	1 23 27.21	0.350	7 1 31.3	2.05	22 23 18.5	1 23 35.35	0.349	7 2 19.1	2.05
23	1 23 35.59	0.349	7 2 20.5	2.05	23 23 14.7	1 23 43 69	0.348	7 3 8.0	2.04
24	1 23 43.94	0.348	7 3 9.5	2.04	24 23 10.9	1 23 52.01	0.347	7 3 56.6	2.03
25	1 23 52.30	0.347	7 3 58.3	2.03	25 23 7.1	1 24 0.31	0.346	7 4 45.1	2.02
26	1 24 0.62	0.346	7 4 46.9	2.02	26 23 3.3	1 24 8.58	0.345	7 5 33.4	2.01
27	1 24 8.91	0.345	7 5 35.3	2.01	27 22 59.5	1 24 16.83	0.344	7 6 21.4	2.00
28	1 24 17.18	0.344	7 6 23.4	2.00	28 22 55.7	1 24 25.05	0.343	7 7 9.2	1.99
29	1 24 25.42	0.343	7 7 11.3	1.99	29 22 52.0	1 24 33.23	0.341	7 7 56.7	1.98
30	1 24 33.62	+0.341	+7 7 59.0	+1.98	30 22 48.2	1 24 41.38	+0.340	+7 8 44.0	+1.97

NEPTUNE, 1871.

Date 1871.	FOR WASHINGTON MEAN NOON				FOR MERIDIAN TRANSIT				
	Apparent Right Ascension	Diff. for 1 hour	Apparent Declination	Diff. for 1 hour	Mean Time of Transit	Apparent Right Ascension	Diff. for 1 hour	Apparent Declination	[illegible]
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	
May 1	1 24 41.7[illegible]	+0.340	+7 8 46.[illegible]	+1.67	1 22 44.4	1 24 4[illegible]	+0.[illegible]	+7 [illegible]	[illegible]
2	1 24 4[illegible]	0.3[illegible]	7 9 3[illegible]	1.[illegible]	2 22 40.[illegible]	1 24 [illegible]	0.[illegible]	7 1[illegible]	[illegible]
3	1 24 [illegible]	0.[illegible]	7 10 2[illegible]	1.[illegible]	3 22 3[illegible]	1 25 [illegible]	0.[illegible]	7 11 [illegible]	[illegible]
4	1 25 6.10	0.[illegible]	7 11 6.[illegible]	1.[illegible]	4 22 31.[illegible]	1 25 1[illegible]	0.[illegible]	7 11 [illegible]	[illegible]
5	1 25 14.1[illegible]	0.[illegible]	7 11 5[illegible]	1.[illegible]	5 22 2[illegible]	1 25 [illegible]	0.[illegible]	7 12 [illegible]	[illegible]
6	1 25 22.12	0.3[illegible]	7 12 [illegible]	1.91	6 22 2[illegible]	1 25 [illegible]	0.3[illegible]	7 13 [illegible]	[illegible]
7	1 25 [illegible]	0.3[illegible]	7 13 24.[illegible]	1.[illegible]	7 22 21.[illegible]	1 25 [illegible]	0.[illegible]	7 14 [illegible]	[illegible]
8	1 25 [illegible]	0.3[illegible]	7 14 10.1	1.[illegible]	8 22 17.[illegible]	1 25 [illegible]	0.[illegible]	7 14 [illegible]	[illegible]
9	1 25 [illegible]	0.3[illegible]	7 14 [illegible]	1.[illegible]	9 22 14.[illegible]	1 25 [illegible]	0.[illegible]	7 1[illegible]	[illegible]
10	1 25 [illegible]	0.3[illegible]	7 15 3[illegible]	1.[illegible]	10 22 10.[illegible]	1 2[illegible]	0.[illegible]	7 1[illegible]	[illegible]
11	1 26 1.[illegible]	0.3[illegible]	7 16 2[illegible]	1.[illegible]	11 22 6.4	1 26 [illegible]	0.3[illegible]	7 17 [illegible]	[illegible]
12	1 26 [illegible]	0.3[illegible]	7 17 7.[illegible]	1.[illegible]	12 22 2.[illegible]	1 26 16.1[illegible]	0.3[illegible]	7 17 [illegible]	[illegible]
13	1 26 16.7[illegible]	0.31[illegible]	7 17 51.3	1.[illegible]	13 21 5[illegible]	1 26 [illegible]	0.[illegible]	7 1[illegible]	[illegible]
14	1 26 2[illegible]	0.31[illegible]	7 1[illegible] 3[illegible]	1.7[illegible]	14 21 5[illegible]	1 26 31.[illegible]	0.31[illegible]	7 1[illegible]	[illegible]
15	1 26 31.[illegible]	0.31[illegible]	7 19 17.[illegible]	1.77	15 21 5[illegible]	1 26 [illegible]	0.311	7 1[illegible]	[illegible]
16	1 26 [illegible]	0.311	7 19 [illegible]	1.7[illegible]	16 21 47.[illegible]	1 26 4[illegible]	0.3[illegible]	7 [illegible]	[illegible]
17	1 26 4[illegible]	0.3[illegible]	7 20 41.[illegible]	1.74	17 21 4[illegible]	1 26 [illegible]	0.3[illegible]	7 2[illegible]	[illegible]
18	1 26 [illegible]	0.3[illegible]	7 21 2[illegible]	1.7[illegible]	18 21 3[illegible]	1 27 [illegible]	0.3[illegible]	7 2[illegible]	[illegible]
19	1 27 1.[illegible]	0.3[illegible]	7 22 4.1	1.70	19 21 3[illegible]	1 27 [illegible]	0.3[illegible]	7 22 [illegible]	[illegible]
20	1 27 [illegible]	0.3[illegible]	7 22 44.[illegible]	1.[illegible]	20 21 3[illegible]	1 27 1[illegible]	0.2[illegible]	7 23 [illegible]	[illegible]
21	1 27 1[illegible]	0.2[illegible]	7 23 2[illegible]	1.67	21 21 2[illegible]	1 27 2[illegible]	0.2[illegible]	7 2[illegible]	[illegible]
22	1 27 2[illegible]	0.2[illegible]	7 24 4.7	1.6[illegible]	22 21 2[illegible]	1 27 2[illegible]	0.2[illegible]	7 2[illegible]	[illegible]
23	1 27 3[illegible]	0.2[illegible]	7 24 4[illegible]	1.63	23 21 2[illegible]	1 27 3[illegible]	0.2[illegible]	7 2[illegible]	[illegible]
24	1 27 [illegible]	0.2[illegible]	7 2[illegible] 2[illegible]	1.61	24 21 16.[illegible]	1 27 41.1[illegible]	0.2[illegible]	7 2[illegible]	[illegible]
25	1 27 41.[illegible]	0.2[illegible]	7 26 1.1	1.[illegible]	25 21 1[illegible]	1 27 4[illegible]	0.2[illegible]	7 26 3[illegible]	[illegible]
26	1 27 [illegible]	0.2[illegible]	7 26 [illegible]	1.57	26 21 [illegible]	1 27 [illegible]	0.2[illegible]	7 27 1[illegible]	[illegible]
27	1 27 [illegible]	0.2[illegible]	7 27 16.[illegible]	1.[illegible]	27 21 [illegible]	1 2[illegible]	0.2[illegible]	7 27 [illegible]	[illegible]
28	1 28 4.1[illegible]	0.2[illegible]	7 27 [illegible]	1.[illegible]	28 21 1.[illegible]	1 28 [illegible]	0.2[illegible]	7 28 [illegible]	[illegible]
29	1 28 10.7[illegible]	0.2[illegible]	7 2[illegible]	1.[illegible]	29 2[illegible]	1 28 1[illegible]	0.2[illegible]	7 [illegible]	[illegible]
30	1 28 17.[illegible]	0.2[illegible]	7 2[illegible]	1.[illegible]	30 2[illegible]	1 28 2[illegible]	0.2[illegible]	7 [illegible]	[illegible]
31	1 28 2[illegible]	0.2[illegible]	7 2[illegible]	1.[illegible]	31 2[illegible]	1 28 2[illegible]	0.2[illegible]	7 [illegible]	[illegible]
June 1	1 28 3[illegible]	0.2[illegible]	7 3[illegible]	1.44	1 2[illegible]	1 28 3[illegible]	0.2[illegible]	7 3[illegible]	[illegible]
2	1 28 [illegible]	0.2[illegible]	7 3[illegible]	1.41	2 2[illegible]	1 28 41.[illegible]	0.2[illegible]	7 31 [illegible]	[illegible]
3	1 28 4[illegible]	0.2[illegible]	7 31 [illegible]	1.[illegible]	3 2[illegible]	1 28 4[illegible]	0.2[illegible]	7 31	[illegible]
4	1 28 [illegible]	0.2[illegible]	7 31 [illegible]	1.37	4 2[illegible]	1 28 [illegible]	0.2[illegible]	7 3[illegible]	[illegible]
5	1 28 [illegible]	0.2[illegible]	7 3[illegible]	1.34	5 2[illegible]	1 2[illegible]	[illegible]	7 3[illegible]	[illegible]
6	1 2[illegible]	0.2[illegible]	7 33 [illegible]	1.3[illegible]	6 2[illegible]	1 2[illegible]	[illegible]	7 3[illegible]	[illegible]
7	1 2[illegible]	[illegible]	7 33 [illegible]	1.3[illegible]	7 2[illegible]	1 29 11 [illegible]	[illegible]	7 3[illegible]	[illegible]
8	1 29 12.[illegible]	0.2[illegible]	7 34 [illegible]	1.[illegible]	8 2[illegible]	1 29 [illegible]	0.2[illegible]	7 34 [illegible]	[illegible]
9	1 29 17.[illegible]	0.2[illegible]	7 34 3[illegible]	1.2[illegible]	9 2[illegible]	1 29 [illegible]	0.2[illegible]	7 34 [illegible]	[illegible]
10	1 29 [illegible]	0.2[illegible]	7 3[illegible]	1.2[illegible]	10 2[illegible] 11.7	1 29 [illegible]	[illegible]	7 3[illegible]	[illegible]
11	1 29 [illegible]	0.2[illegible]	7 3[illegible] 31.[illegible]	1.2[illegible]	11 2[illegible]	1 29 [illegible]	[illegible]	7 3[illegible]	[illegible]
12	1 29 3[illegible]	0.2[illegible]	7 3[illegible]	1.1[illegible]	12 2[illegible]	1 29 [illegible]	[illegible]	7 3[illegible]	[illegible]
13	1 29 [illegible]	0.2[illegible]	7 3[illegible]	1.1[illegible]	13 2[illegible]	1 29 [illegible]	[illegible]	7 3[illegible]	[illegible]
14	1 29 44.7[illegible]	0.21[illegible]	7 3[illegible]	1.1[illegible]	14 1[illegible]	1 29 [illegible]	[illegible]	7 3[illegible]	[illegible]
15	1 29 [illegible]	0.2[illegible]	7 37 [illegible]	1.1[illegible]	15 1[illegible]	1 29 [illegible]	[illegible]	7 3[illegible]	[illegible]
16	1 29 [illegible]	[illegible]	7 37 4[illegible]	1.[illegible]	16 1[illegible]	1 29 [illegible]	[illegible]	7 3[illegible]	[illegible]
17	1 2[illegible]	[illegible]	7 3[illegible]	1.[illegible]	17 1[illegible] 44.7	1 3[illegible]	[illegible]	7 3[illegible]	[illegible]
18	1 3[illegible]	[illegible]	7 3[illegible]	1.[illegible]	18 1[illegible]	1 3[illegible]	[illegible]	7 3[illegible]	[illegible]
19	1 3[illegible]	[illegible]	7 3[illegible]	[illegible]	19 1[illegible]	1 3[illegible]	[illegible]	7 3[illegible]	[illegible]
20	1 3[illegible]	[illegible]	7 3[illegible]	[illegible]	20 1[illegible]	1 3[illegible]	[illegible]	7 3[illegible]	[illegible]
21	1 3[illegible]	[illegible]	7 3[illegible]	[illegible]	21 1[illegible]	1 3[illegible]	[illegible]	7 4[illegible]	[illegible]
22	1 3[illegible]	[illegible]	7 4[illegible]	[illegible]	22 1[illegible]	1 3[illegible]	[illegible]	7 4[illegible]	[illegible]
23	1 3[illegible]	[illegible]	7 4[illegible]	[illegible]	23 1[illegible]	1 3[illegible]	[illegible]	7 4[illegible]	[illegible]
24	1 3[illegible]	[illegible]	7 4[illegible]	[illegible]	24 1[illegible]	1 3[illegible]	[illegible]	7 4[illegible]	[illegible]
25	1 3[illegible]	[illegible]	7 41 1[illegible]	[illegible]	25 1[illegible]	1 3[illegible]	[illegible]	7 4[illegible]	[illegible]
26	1 3[illegible]	[illegible]	7 41 [illegible]	[illegible]	26 1[illegible]	1 3[illegible]	[illegible]	7 41 [illegible]	[illegible]
27	1 3[illegible]	[illegible]	7 41 [illegible]	[illegible]	27 1[illegible]	1 3[illegible]	[illegible]	7 42 [illegible]	[illegible]
28	1 3[illegible]	[illegible]	7 42 [illegible]	[illegible]	28 1[illegible]	1 3[illegible]	[illegible]	7 42 [illegible]	[illegible]
29	1 3[illegible]	[illegible]	7 42 [illegible]	[illegible]	29 1[illegible]	1 3[illegible]	[illegible]	7 42 [illegible]	[illegible]
30	1 3[illegible]	[illegible]	+7 42 [illegible]	[illegible]	30 1[illegible]	1 3[illegible]	[illegible]	+7 4[illegible]	[illegible]

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	1 30 56.75	+0.137	+7 42 58.7	+0.65	1 18 50.6	1 30 59.30	+0.134	+7 43 10.8	+0.63
2	1 30 59.99	0.133	7 43 14.0	0.62	2 18 46.7	1 31 2.45	0.129	7 43 25.5	0.60
3	1 31 3.12	0.128	7 43 28.6	0.59	3 18 42.9	1 31 5.48	0.124	7 43 39.4	0.57
4	1 31 6.14	0.123	7 43 42.4	0.56	4 18 39.0	1 31 8.40	0.119	7 43 52.7	0.55
5	1 31 9.03	0.118	7 43 55.6	0.54	5 18 35.1	1 31 11.20	0.114	7 44 5.3	0.52
6	1 31 11.81	0.113	7 44 8.1	0.51	6 18 31.3	1 31 13.88	0.109	7 44 17.2	0.49
7	1 31 14.47	0.108	7 44 19.9	0.48	7 18 27.4	1 31 16.44	0.104	7 44 28.4	0.46
8	1 31 17.01	0.103	7 44 31.0	0.45	8 18 23.5	1 31 18.89	0.099	7 44 38.9	0.43
9	1 31 19.44	0.098	7 44 41.3	0.42	9 18 19.6	1 31 21.21	0.094	7 44 48.6	0.40
10	1 31 21.74	0.093	7 44 50.9	0.39	10 18 15.7	1 31 23.41	0.089	7 44 57.7	0.37
11	1 31 23.92	0.088	7 44 59.8	0 36	11 18 11.8	1 31 25.50	0.084	7 45 6.1	0.34
12	1 31 25.98	0.083	7 45 8.0	0.33	12 18 7.9	1 31 27.47	0.079	7 45 13.8	0.31
13	1 31 27.92	0.078	7 45 15.5	0.30	13 18 4.0	1 31 29.32	0.074	7 45 20.7	0.28
14	1 31 29.75	0.073	7 45 22.3	0.27	14 18 0.1	1 31 31.04	0.069	7 45 26.9	0.25
15	1 31 31.45	0.068	7 45 28.4	0.24	15 17 56.2	1 31 32.64	0.064	7 45 32.4	0.22
16	1 31 33.02	0.063	7 45 33.7	0.21	16 17 52.3	1 31 34.12	0.059	7 45 37.2	0.19
17	1 31 34.47	0.058	7 45 38.3	0.18	17 17 48.4	1 31 35.47	0.054	7 45 41.2	0.16
18	1 31 35.80	0.053	7 45 42.2	0.15	18 17 44.5	1 31 36.70	0.049	7 45 44.5	0.13
19	1 31 37.00	0.048	7 45 45.3	0.12	19 17 40.6	1 31 37.81	0.044	7 45 47.1	0.10
20	1 31 38.08	0.043	7 45 47.7	0.09	20 17 36.7	1 31 38.80	0.039	7 45 49.0	0.07
21	1 31 39.04	0.037	7 45 49.4	0.06	21 17 32.8	1 31 39.67	0.034	7 45 50.2	+0.03
22	1 31 39.88	0.032	7 45 50.4	+0.02	22 17 28.9	1 31 40.41	0.029	7 45 50.6	0.00
23	1 31 40.59	0.027	7 45 50.6	−0.01	23 17 24.9	1 31 41.03	0.024	7 45 50.3	−0.03
24	1 31 41.18	0.022	7 45 50.1	0.04	24 17 21.0	1 31 41.52	0.019	7 45 49.3	0.06
25	1 31 41.64	0.017	7 45 48.9	0.07	25 17 17.0	1 31 41.89	0.014	7 45 47.6	0.09
26	1 31 41.98	0.012	7 45 47.0	0.10	26 17 13.1	1 31 42.14	0.008	7 45 45.2	0.12
27	1 31 42.20	0.006	7 45 44.4	0.13	27 17 9.2	1 31 42.27	+0.003	7 45 42.0	0.14
28	1 31 42.29	+0.001	7 45 41.0	0.15	28 17 5.2	1 31 42.28	−0.002	7 45 38.1	0.17
29	1 31 42.25	−0.004	7 45 36.9	0.18	29 17 1.3	1 31 42.16	0.007	7 45 33.5	0.20
30	1 31 42.10	0.009	7 45 32.1	0.21	30 16 57.3	1 31 41.92	0.012	7 45 28.2	0.23
31	1 31 41.83	0.014	7 45 26.6	0.24	31 16 53.4	1 31 41.56	0.017	7 45 22.2	0.26
Aug. 1	1 31 41.43	0.019	7 45 20.4	0.27	1 16 49.4	1 31 41.07	0.022	7 45 15.6	0.29
2	1 31 40.91	0.024	7 45 13.5	0.30	2 16 45.5	1 31 40.47	0.027	7 45 8.3	0.32
3	1 31 40.27	0.029	7 45 6.0	0.33	3 16 41.5	1 31 39.75	0.032	7 45 0.3	0.35
4	1 31 39.51	0.034	7 44 57.8	0.36	4 16 37.6	1 31 38.91	0.037	7 44 51.6	0.38
5	1 31 38.63	0.039	7 44 48.8	0.39	5 16 33.6	1 31 37.95	0.042	7 44 42.2	0.41
6	1 31 37.63	0.044	7 44 39.1	0.42	6 16 29.7	1 31 36.87	0.047	7 44 32.0	0.44
7	1 31 36.51	0.049	7 44 28.7	0.45	7 16 25.8	1 31 35.67	0.052	7 44 21.2	0.46
8	1 31 35.27	0.054	7 44 17.7	0.47	8 16 21.8	1 31 34.35	0.057	7 44 9.7	0.49
9	1 31 33.91	0.059	7 44 6.0	0.50	9 16 17.9	1 31 32.92	0.062	7 43 57.6	0.52
10	1 31 32.43	0.064	7 43 53.6	0.53	10 16 14.0	1 31 31.36	0.067	7 43 44.8	0.55
11	1 31 30.83	0.069	7 43 40.5	0.56	11 16 10.0	1 31 29.68	0.072	7 43 31.3	0.58
12	1 31 29.11	0.074	7 43 26.8	0.59	12 16 6.0	1 31 27.89	0.077	7 43 17.2	0.60
13	1 31 27.27	0.079	7 43 12.4	0.61	13 16 2.1	1 31 25.98	0.082	7 43 2.4	0.63
14	1 31 25.32	0.084	7 42 57.3	0.64	14 15 58.1	1 31 23.95	0.087	7 42 46.9	0.66
15	1 31 23.25	0.089	7 42 41.6	0.67	15 15 54.1	1 31 21.81	0.091	7 42 30.8	0.69
16	1 31 21.06	0.093	7 42 25.2	0.70	16 15 50.1	1 31 19.55	0.096	7 42 14.0	0.71
17	1 31 18.76	0.098	7 42 8.2	0.72	17 15 46.1	1 31 17.18	0.101	7 41 56.6	0.74
18	1 31 16.34	0.103	7 41 50.5	0.75	18 15 42.2	1 31 14.70	0.106	7 41 38.6	0.77
19	1 31 13.81	0.108	7 41 32.2	0.78	19 15 38.2	1 31 12.10	0.110	7 41 20.0	0.79
20	1 31 11.17	0.112	7 41 13.3	0.80	20 15 34.2	1 31 9.40	0.115	7 41 0.8	0.82
21	1 31 8.42	0.117	7 40 53.8	0.83	21 15 30.2	1 31 6.59	0.119	7 40 40.9	0.84
22	1 31 5.57	0.121	7 40 33.7	0.85	22 15 26.2	1 31 3.68	0.124	7 40 20.4	0.87
23	1 31 2.61	0.126	7 40 12.9	0.88	23 15 22.2	1 31 0.66	0.128	7 39 59.3	0.89
24	1 30 59.54	0.130	7 39 51.6	0.90	24 15 18.3	1 30 57.53	0.133	7 39 37.7	0.92
25	1 30 56.36	0.135	7 39 29.7	0.93	25 15 14.3	1 30 54.29	0.137	7 39 15.5	0.94
26	1 30 53.08	0.139	7 39 7.2	0.95	26 15 10.3	1 30 50.95	0.141	7 38 52.7	0.96
27	1 30 49.70	0.143	7 38 44.1	0.97	27 15 6.3	1 30 47.51	0.145	7 38 29.3	0.99
28	1 30 46.21	0.147	7 38 20.4	1.00	28 15 2.4	1 30 43.97	0.149	7 38 5.3	1.01
29	1 30 42.62	0.151	7 37 56.2	1.02	29 14 58.4	1 30 40.34	0.154	7 37 40.8	1.03
30	1 30 38.94	0.156	7 37 31.5	1.04	30 14 54.4	1 30 36.60	0.158	7 37 15.8	1.05
31	1 30 35.16	−0.160	+7 37 6.2	−1.06	31 14 50.4	1 30 32.76	−0.162	+7 36 50.3	−1.08

NEPTUNE, 1871.

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	1 30 31.27	-0.164	+7 36 40.4	-1.09	1 14 46.4	1 30 28.83	-0.166	+7 36 24.3	-1.10
2	1 30 27.29	0.168	7 36 14.2	1.11	2 14 42.4	1 30 24.81	0.170	7 35 57.8	1.12
3	1 30 23.22	0.172	7 35 47.4	1.13	3 14 38.3	1 30 20.69	0.174	7 35 30.8	1.14
4	1 30 19.06	0.175	7 35 20.1	1.15	4 14 34.3	1 30 16.48	0.177	7 35 3.3	1.16
5	1 30 14.80	0.179	7 34 52.3	1.17	5 14 30.3	1 30 12.19	0.181	7 34 35.3	1.18
6	1 30 10.46	0.183	7 34 24.0	1.19	6 14 26.3	1 30 7.81	0.185	7 34 6.8	1.20
7	1 30 6.03	0.186	7 33 55.2	1.21	7 14 22.3	1 30 3.34	0.188	7 33 37.8	1.22
8	1 30 1.51	0.190	7 33 26.0	1.23	8 14 18.3	1 29 58.78	0.192	7 33 8.4	1.24
9	1 29 56.91	0.193	7 32 56.3	1.25	9 14 14.3	1 29 54.14	0.195	7 32 38.5	1.26
10	1 29 52.23	0.197	7 32 26.2	1.26	10 14 10.3	1 29 49.42	0.199	7 32 8.2	1.27
11	1 29 47.46	0.200	7 31 55.6	1.28	11 14 6.3	1 29 44.62	0.202	7 31 37.5	1.29
12	1 29 42.61	0.204	7 31 24.7	1.30	12 14 2.3	1 29 39.74	0.206	7 31 6.4	1.31
13	1 29 37.68	0.207	7 30 53.3	1.32	13 13 58.2	1 29 34.78	0.209	7 30 34.8	1.33
14	1 29 32.68	0.210	7 30 21.5	1.33	14 13 54.2	1 29 29.75	0.212	7 30 2.9	1.34
15	1 29 27.60	0.213	7 29 49.3	1.35	15 13 50.2	1 29 24.65	0.215	7 29 30.6	1.36
16	1 29 22.45	0.216	7 29 16.8	1.36	16 13 46.2	1 29 19.47	0.218	7 28 58.0	1.37
17	1 29 17.23	0.219	7 28 44.0	1.38	17 13 42.2	1 29 14.22	0.221	7 28 25.1	1.39
18	1 29 11.94	0.222	7 28 10.8	1.39	18 13 38.2	1 29 8.91	0.223	7 27 51.8	1.40
19	1 29 6.59	0.224	7 27 37.2	1.41	19 13 34.2	1 29 3.54	0.226	7 27 18.1	1.42
20	1 29 1.18	0.227	7 27 3.3	1.42	20 13 30.1	1 28 58.10	0.228	7 26 44.1	1.43
21	1 28 55.70	0.229	7 26 29.1	1.43	21 13 26.1	1 28 52.61	0.231	7 26 9.7	1.44
22	1 28 50.16	0.232	7 25 54.5	1.44	22 13 22.1	1 28 47.06	0.233	7 25 35.1	1.45
23	1 28 44.57	0.234	7 25 19.7	1.45	23 13 18.1	1 28 41.45	0.235	7 25 0.3	1.46
24	1 28 38.92	0.236	7 24 44.7	1.47	24 13 14.1	1 28 35.79	0.238	7 24 25.3	1.48
25	1 28 33.22	0.239	7 24 9.4	1.48	25 13 10.0	1 28 30.08	0.240	7 23 50.0	1.49
26	1 28 27.47	0.241	7 23 33.9	1.49	26 13 6.0	1 28 24.31	0.242	7 23 14.4	1.49
27	1 28 21.67	0.243	7 22 58.1	1.49	27 13 2.0	1 28 18.50	0.244	7 22 38.6	1.50
28	1 28 15.83	0.244	7 22 22.1	1.50	28 12 56.0	1 28 12.65	0.245	7 22 2.6	1.51
29	1 28 9.94	0.246	7 21 45.9	1.51	29 12 53.9	1 28 6.76	0.247	7 21 26.5	1.52
30	1 28 4.01	0.248	7 21 9.6	1.52	30 12 49.9	1 28 0.83	0.249	7 20 50.2	1.53
Oct. 1	1 27 58.04	0.250	7 20 33.1	1.53	1 12 45.8	1 27 54.85	0.251	7 20 13.6	1.53
2	1 27 52.03	0.251	7 19 56.4	1.53	2 12 41.8	1 27 48.84	0.252	7 19 36.9	1.54
3	1 27 45.99	0.253	7 19 19.5	1.54	3 12 37.8	1 27 42.79	0.254	7 19 0.0	1.54
4	1 27 39.91	0.254	7 18 42.5	1.54	4 12 33.7	1 27 36.71	0.255	7 18 23.1	1.55
5	1 27 33.80	0.255	7 18 5.4	1.55	5 12 29.7	1 27 30.60	0.256	7 17 46.0	1.55
6	1 27 27.66	0.256	7 17 28.2	1.55	6 12 25.7	1 27 24.47	0.257	7 17 8.9	1.56
7	1 27 21.50	0.257	7 16 50.9	1.56	7 12 21.6	1 27 18.31	0.258	7 16 31.7	1.56
8	1 27 15.31	0.258	7 16 13.5	1.56	8 12 17.6	1 27 12.13	0.259	7 15 54.4	1.56
9	1 27 9.10	0.259	7 15 36.1	1.56	9 12 13.6	1 27 5.93	0.260	7 15 17.0	1.56
10	1 27 2.87	0.260	7 14 58.6	1.56	10 12 9.5	1 26 59.71	0.261	7 14 39.6	1.56
11	1 26 56.63	0.261	7 14 21.0	1.56	11 12 5.5	1 26 53.48	0.261	7 14 2.1	1.56
12	1 26 50.37	0.261	7 13 43.4	1.56	12 12 1.5	1 26 47.23	0.261	7 13 24.6	1.56
13	1 26 44.10	0.261	7 13 5.8	1.56	13 11 57.4	1 26 40.97	0.261	7 12 47.2	1.56
14	1 26 37.82	0.262	7 12 28.3	1.56	14 11 53.4	1 26 34.71	0.262	7 12 9.8	1.56
15	1 26 31.54	0.262	7 11 50.8	1.56	15 11 49.3	1 26 28.45	0.262	7 11 32.4	1.56
16	1 26 25.26	0.262	7 11 13.3	1.56	16 11 45.3	1 26 22.18	0.262	7 10 55.0	1.56
17	1 26 18.97	0.262	7 10 35.9	1.56	17 11 41.3	1 26 15.91	0.262	7 10 17.7	1.56
18	1 26 12.69	0.262	7 9 58.6	1.55	18 11 37.2	1 26 9.65	0.262	7 9 40.5	1.55
19	1 26 6.41	0.262	7 9 21.3	1.55	19 11 33.2	1 26 3.40	0.262	7 9 3.4	1.55
20	1 26 0.14	0.261	7 8 44.1	1.55	20 11 29.2	1 25 57.14	0.261	7 8 26.4	1.55
21	1 25 53.88	0.261	7 8 7.1	1.54	21 11 25.1	1 25 50.89	0.261	7 7 49.5	1.54
22	1 25 47.62	0.260	7 7 30.2	1.54	22 11 21.1	1 25 44.66	0.260	7 7 12.8	1.54
23	1 25 41.38	0.259	7 6 53.5	1.53	23 11 17.0	1 25 38.45	0.259	7 6 36.3	1.53
24	1 25 35.16	0.259	7 6 16.9	1.52	24 11 13.0	1 25 32.26	0.259	7 5 59.9	1.52
25	1 25 28.96	0.258	7 5 40.5	1.51	25 11 8.9	1 25 26.08	0.258	7 5 23.7	1.51
26	1 25 22.78	0.257	7 5 4.3	1.50	26 11 4.9	1 25 19.93	0.257	7 4 47.7	1.50
27	1 25 16.63	0.256	7 4 28.3	1.49	27 11 0.9	1 25 13.81	0.256	7 4 11.9	1.49
28	1 25 10.50	0.255	7 3 52.5	1.49	28 10 56.8	1 25 7.71	0.254	7 3 36.3	1.49
29	1 25 4.40	0.253	7 3 16.9	1.48	29 10 52.8	1 25 1.64	0.253	7 3 0.9	1.48
30	1 24 58.33	0.252	7 2 41.6	1.47	30 10 48.8	1 24 55.61	0.252	7 2 25.8	1.46
31	1 24 52.30	0.251	7 2 6.6	1.45	31 10 44.8	1 24 49.61	0.250	7 1 51.0	1.45
32	1 24 46.31	-0.249	+7 1 31.9	-1.44	32 10 40.7	1 24 43.65	-0.248	+7 1 16.5	-1.44

Date. 1871.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	1 24 46.31	−0.249	+7 1 31.9	−1.44	1 10 40.7	1 24 43.65	−0.248	+7 1 16.5	−1.44
2	1 24 40.35	0.247	7 0 57.4	1.43	2 10 36.7	1 24 37.73	0.247	7 0 42.3	1.43
3	1 24 34.43	0.246	7 0 23.2	1.42	3 10 32.7	1 24 31.85	0.245	7 0 8.4	1.41
4	1 24 28.56	0.244	6 59 49.4	1.40	4 10 28.7	1 24 26.01	0.243	6 59 34.8	1.40
5	1 24 22.74	0.242	6 59 15.9	1.39	5 10 24.6	1 24 20.22	0.241	6 59 1.6	1.38
6	1 24 16.96	0.240	6 58 42.8	1.37	6 10 20.6	1 24 14.48	0.239	6 58 28.7	1.37
7	1 24 11.23	0.238	6 58 10.0	1.36	7 10 16.6	1 24 8.79	0.237	6 57 56.1	1.35
8	1 24 5.55	0.235	6 57 37.6	1.34	8 10 12.6	1 24 3.16	0.234	6 57 23.9	1.34
9	1 23 59.93	0.233	6 57 5.5	1.33	9 10 8.5	1 23 57.58	0.232	6 56 52.1	1.32
10	1 23 54.36	0.231	6 56 33.8	1.31	10 10 4.5	1 23 52.06	0.230	6 56 20.7	1.30
11	1 23 48.85	0.228	6 56 2.6	1.29	11 10 0.5	1 23 46.59	0.227	6 55 49.7	1.28
12	1 23 43.41	0.225	6 55 31.8	1.27	12 9 56.5	1 23 41.18	0.224	6 55 19.2	1.26
13	1 23 38.03	0.223	6 55 1.5	1.25	13 9 52.5	1 23 35.84	0.222	6 54 49.1	1.25
14	1 23 32.72	0.220	6 54 31.6	1.24	14 9 48.4	1 23 30.57	0.219	6 54 19.5	1.23
15	1 23 27.48	0.217	6 54 2.2	1.22	15 9 44.4	1 23 25.37	0.216	6 53 50.4	1.21
16	1 23 22.31	0.214	6 53 33.2	1.20	16 9 40.4	1 23 20.25	0.213	6 53 21.7	1.19
17	1 23 17.22	0.211	6 53 4.7	1.17	17 9 36.4	1 23 15.20	0.209	6 52 53.4	1.16
18	1 23 12.20	0.207	6 52 36.8	1.15	18 9 32.4	1 23 10.22	0.206	6 52 25.8	1.14
19	1 23 7.26	0.204	6 52 9.4	1.13	19 9 28.3	1 23 5.32	0.203	6 51 58.7	1.12
20	1 23 2.40	0.201	6 51 42.5	1.11	20 9 24.3	1 23 0.51	0.199	6 51 32.1	1.10
21	1 22 57.61	0.197	6 51 16.1	1.09	21 9 20.3	1 22 55.78	0.196	6 51 5.9	1.08
22	1 22 52.91	0.194	6 50 50.3	1.06	22 9 16.3	1 22 51.12	0.192	6 50 40.4	1.05
23	1 22 48.30	0.190	6 50 25.1	1.04	23 9 12.3	1 22 46.55	0.189	6 50 15.5	1.03
24	1 22 43.78	0.187	6 50 0.5	1.01	24 9 8.3	1 22 42.08	0.185	6 49 51.2	1.00
25	1 22 39.35	0.183	6 49 36.4	0.99	25 9 4.3	1 22 37.70	0.181	6 49 27.4	0.98
26	1 22 35.01	0.179	6 49 12.9	0.97	26 9 0.3	1 22 33.41	0.177	6 49 4.2	0.96
27	1 22 30.76	0.175	6 48 50.0	0.94	27 8 56.3	1 22 29.20	0.174	6 48 41.6	0.93
28	1 22 26.61	0.171	6 48 27.7	0.92	28 8 52.3	1 22 25.09	0.170	6 48 19.6	0.91
29	1 22 22.55	0.167	6 48 6.0	0.89	29 8 48.3	1 22 21.08	0.166	6 47 58.2	0.88
30	1 22 18.59	0.163	6 47 45.0	0.86	30 8 44.3	1 22 17.17	0.162	6 47 37.5	0.85
Dec. 1	1 22 14.72	0.159	6 47 24.6	0.84	1 8 40.3	1 22 13.35	0.159	6 47 17.4	0.83
2	1 22 10.96	0.155	6 47 4.9	0.81	2 8 36.3	1 22 9.63	0.153	6 46 58.0	0.80
3	1 22 7.30	0.150	6 46 45.8	0.78	3 8 32.3	1 22 6.02	0.149	6 46 39.2	0.77
4	1 22 3.74	0.146	6 46 27.4	0.75	4 8 28.3	1 22 2.51	0.145	6 46 21.0	0.74
5	1 22 0.29	0.142	6 46 9.6	0.73	5 8 24.3	1 21 59.10	0.140	6 46 3.5	0.72
6	1 21 56.94	0.137	6 45 52.5	0.70	6 8 20.3	1 21 55.80	0.136	6 45 46.7	0.69
7	1 21 53.70	0.133	6 45 36.1	0.67	7 8 16.3	1 21 52.61	0.131	6 45 30.5	0.66
8	1 21 50.57	0.128	6 45 20.4	0.64	8 8 12.3	1 21 49.53	0.126	6 45 15.1	0.63
9	1 21 47.56	0.123	6 45 5.4	0.61	9 8 8.3	1 21 46.56	0.122	6 45 0.4	0.60
10	1 21 44.66	0.119	6 44 51.1	0.58	10 8 4.4	1 21 43.71	0.117	6 44 46.4	0.57
11	1 21 41.87	0.114	6 44 37.5	0.55	11 8 0.4	1 21 40.97	0.112	6 44 33.1	0.54
12	1 21 39.20	0.109	6 44 24.7	0.52	12 7 56.5	1 21 38.34	0.107	6 44 20.5	0.51
13	1 21 36.64	0.104	6 44 12.6	0.49	13 7 52.5	1 21 35.83	0.102	6 44 8.7	0.48
14	1 21 34.20	0.099	6 44 1.2	0.46	14 7 48.5	1 21 33.44	0.097	6 43 57.6	0.45
15	1 21 31.88	0.094	6 43 50.6	0.43	15 7 44.6	1 21 31.16	0.092	6 43 47.3	0.42
16	1 21 29.68	0.089	6 43 40.7	0.40	16 7 40.6	1 21 29.00	0.087	6 43 37.7	0.39
17	1 21 27.60	0.084	6 43 31.6	0.36	17 7 36.7	1 21 26.96	0.082	6 43 28.8	0.35
18	1 21 25.64	0.079	6 43 23.2	0.33	18 7 32.7	1 21 25.05	0.077	6 43 20.7	0.32
19	1 21 23.81	0.074	6 43 15.6	0.30	19 7 28.8	1 21 23.27	0.072	6 43 13.4	0.29
20	1 21 22.10	0.069	6 43 8.8	0.27	20 7 24.8	1 21 21.61	0.067	6 43 6.8	0.26
21	1 21 20.52	0.063	6 43 2.7	0.24	21 7 20.9	1 21 20.07	0.061	6 43 1.0	0.23
22	1 21 19.06	0.058	6 42 57.4	0.20	22 7 16.9	1 21 18.65	0.056	6 42 55.9	0.19
23	1 21 17.72	0.053	6 42 52.9	0.17	23 7 13.0	1 21 17.35	0.051	6 42 51.7	0.16
24	1 21 16.51	0.048	6 42 49.2	0.14	24 7 9.0	1 21 16.18	0.046	6 42 48.3	0.13
25	1 21 15.43	0.042	6 42 46.2	0.11	25 7 5.0	1 21 15.14	0.040	6 42 45.6	0.10
26	1 21 14.48	0.037	6 42 44.0	0.08	26 7 1.1	1 21 14.23	0.035	6 42 43.6	0.07
27	1 21 13.65	0.032	6 42 42.6	0.04	27 6 57.2	1 21 13.44	0.030	6 42 42.4	−0.03
28	1 21 12.95	0.026	6 42 42.0	−0.01	28 6 53.2	1 21 12.78	0.025	6 42 42.0	0.00
29	1 21 12.38	0.021	6 42 42.1	+0.02	29 6 49.3	1 21 12.25	0.020	6 42 42.4	+0.03
30	1 21 11.94	0.016	6 42 43.0	0.06	30 6 45.3	1 21 11.84	0.014	6 42 43.6	0.07
31	1 21 11.62	0.010	6 42 44.7	0.09	31 6 41.3	1 21 11.55	0.009	6 42 45.5	0.10
32	1 21 11.43	−0.005	+6 42 47.2	+0.12	32 6 37.4	1 21 11.40	−0.004	+6 42 48.2	+0.13

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

Mean Noon.	HORIZONTAL PARALLAXES.			SEMIDIAMETERS.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	☿	♀	♂	☿	♀	♂	☿	♀	♂
Jan. 1	8″.90	5″.21	7″.50	3″.36	5″.03	4″.28	0^s.25	0^s.36	0^s.29
6	10.27	5.23	7.82	3.87	5.05	4.47	0.28	0.36	0.30
11	11.90	5.24	8.16	4.50	5.07	4.66	0.32	0.36	0.31
16	13.13	5.27	8.53	4.97	5.09	4.87	0.36	0.36	0.33
21	13.19	5.29	8.93	4.98	5.11	5.10	0.36	0.36	0.34
26	12.25	5.32	9.35	4.62	5.14	5.34	0.33	0.36	0.36
31	11.01	5.35	9.80	4.16	5.17	5.60	0.30	0.36	0.37
Feb. 5	9.93	5.39	10.26	3.75	5.21	5.86	0.27	0.36	0.39
10	9.08	5.43	10.75	3.42	5.25	6.14	0.25	0.36	0.41
15	8.40	5.48	11.24	3.17	5.29	6.42	0.23	0.36	0.43
20	7.88	5.52	11.72	2.97	5.34	6.70	0.21	0.36	0.45
25	7.47	5.58	12.19	2.82	5.39	6.96	0.20	0.36	0.46
Mar. 2	7.15	5.64	12.62	2.70	5.44	7.21	0.19	0.36	0.48
7	6.90	5.70	12.99	2.60	5.51	7.42	0.18	0.37	0.50
12	6.71	5.77	13.28	2.53	5.57	7.59	0.18	0.37	0.51
17	6.58	5.84	13.48	2.48	5.65	7.70	0.17	0.38	0.51
22	6.53	5.93	13.56	2.47	5.73	7.75	0.17	0.39	0.52
27	6.57	6.02	13.54	2.48	5.81	7.73	0.17	0.40	0.52
April 1	6.75	6.12	13.40	2.55	5.91	7.66	0.18	0.41	0.51
6	7.11	6.23	13.18	2.68	6.01	7.53	0.19	0.42	0.50
11	7.72	6.34	12.87	2.92	6.12	7.35	0.21	0.43	0.49
16	8.62	6.47	12.51	3.25	6.25	7.14	0.23	0.44	0.48
21	9.80	6.60	12.10	3.70	6.38	6.91	0.27	0.46	0.46
26	11.24	6.75	11.68	4.24	6.52	6.67	0.31	0.47	0.45
May 1	12.83	6.92	11.25	4.84	6.68	6.42	0.36	0.49	0.43
6	14.38	7.09	10.82	5.43	6.85	6.18	0.40	0.50	0.41
11	15.56	7.28	10.40	5.87	7.03	5.94	0.43	0.52	0.40
16	16.04	7.49	10.00	6.05	7.24	5.71	0.43	0.53	0.38
21	15.70	7.72	9.62	5.93	7.46	5.49	0.43	0.55	0.37
26	14.72	7.96	9.26	5.56	7.69	5.29	0.39	0.56	0.35
31	13.42	8.24	8.92	5.07	7.96	5.10	0.35	0.58	0.34
June 5	12.05	8.54	8.61	4.55	8.25	4.92	0.32	0.60	0.33
10	10.76	8.86	8.31	4.06	8.56	4.75	0.29	0.62	0.32
15	9.62	9.22	8.04	3.63	8.91	4.59	0.26	0.63	0.31
20	8.65	9.61	7.78	3.27	9.29	4.45	0.24	0.65	0.30
25	7.85	10.05	7.55	2.96	9.71	4.31	0.22	0.68	0.29
30	7.25	10.53	7.32	2.74	10.17	4.18	0.20	0.71	0.28
July 5	6.85	11.06	7.12	2.59	10.68	4.07	0.19	0.74	0.27
10	6.66	11.65	6.93	2.51	11.25	3.96	0.19	0.77	0.26
15	6.64	12.30	6.75	2.50	11.88	3.85	0.19	0.80	0.26
20	6.75	13.05	6.58	2.55	12.60	3.76	0.19	0.86	0.25
25	6.97	13.85	6.43	2.63	13.38	3.67	0.19	0.91	0.25
30	7.28	14.77	6.28	2.74	14.27	3.59	0.19	0.96	0.24
Aug. 4	7.64	15.81	6.15	2.88	15.27	3.51	0.20	1.01	0.24
9	8.09	16.98	6.02	3.06	16.40	3.44	0.21	1.09	0.23
14	8.63	18.29	5.90	3.26	17.67	3.37	0.22	1.18	0.23
19	9.28	19.76	5.79	3.50	19.09	3.31	0.24	1.28	0.23
24	10.06	21.39	5.68	3.80.	20.66	3.25	0.26	1.39	0.22
29	10.98	23.18	5.58	4.15	22.39	3.19	0.28	1.52	0.22
Sept. 3	12.03	25.11	5.49	4.54	24.24	3.14	0.31	1.65	0.22
8	13.06	27.09	5.40	4.93	26.16	3.09	0.34	1.78	0.22
13	13.74	28.94	5.32	5.19	27.96	3.04	0.35	1.90	0.21
18	13.54	30.45	5.24	5.11	29.42	2.99	0.35	2.00	0.21
23	12.33	31.40	5.17	4.65	30.32	2.95	0.32	2.05	0.21
28	10.64	31.59	5.10	4.02	30.50	2.91	0.28	2.06	0.21
Oct. 3	9.14	30.96	5.03	3.44	29.90	2.87	0.24	2.01	0.21
8	8.00	29.69	4.96	3.02	28.68	2.84	0.21	1.92	0.21
13	7.25	27.99	4.90	2.73	27.03	2.80	0.19	1.81	0.20
18	6.76	26.09	4.85	2.55	25.19	2.77	0.17	1.71	0.20
23	6.44	24.18	4.79	2.43	23.34	2.74	0.17	1.58	0.20

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

Mean Noon.	HORIZONTAL PARALLAXES.			SEMIDIAMETERS.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	☿	♀	♂	☿	♀	♂	☿	♀	♂
Oct. 28	6″.26	22″.35	4″.74	2″.36	21″.59	2″.71	0ˢ.16	1ˢ.44	0ˢ.20
Nov. 2	6.15	20.67	4.69	2.32	19.96	2.68	0.16	1.33	0.20
7	6.12	19.14	4.64	2.31	18.48	2.65	0.17	1.24	0.19
12	6.15	17.80	4.59	2.32	17.19	2.62	0.17	1.15	0.19
17	6.24	16.59	4.54	2.36	16.02	2.59	0.17	1.07	0.19
22	6.40	15.52	4.50	2.42	14.99	2.57	0.18	1.00	0.19
27	6.64	14.56	4.46	2.51	14.07	2.55	0.19	0.94	0.19
Dec. 2	6.99	13.71	4.42	2.64	13.25	2.52	0.20	0.89	0.18
7	7.48	12.96	4.38	2.82	12.51	2.50	0.21	0.85	0.18
12	8.18	12.28	4.34	3.09	11.86	2.48	0.23	0.80	0.18
17	9.18	11.67	4.30	3.47	11.27	2.45	0.26	0.77	0.18
22	10.57	11.12	4.26	3.99	10.74	2.43	0.29	0.74	0.17
27	12.14	10.62	4.22	4.58	10.26	2.41	0.33	0.71	0.17
32	13.12	10.17	4.19	4.95	9.82	2.39	0.36	0.68	0.17
Mean Noon.	♃	♄	♅	♃	♄	♅	♃	♄	♅
Jan. 1	2″.12	0″.80	0″.50	22″.52	7″.09	1″.90	1ˢ.73	0ˢ.55	0ˢ.12
11	2.08	0.81	0.50	22.12	7.12	1.90	1.70	0.55	0.12
21	2.03	0.81	0.50	21.59	7.16	1.90	1.66	0.55	0.12
31	1.97	0.82	0.50	20.99	7.22	1.89	1.61	0.56	0.12
Feb. 10	1.91	0.83	0.50	20.35	7.29	1.88	1.56	0.56	0.12
20	1.85	0.84	0.49	19.71	7.38	1.87	1.51	0.57	0.12
Mar. 2	1.79	0.85	0.49	19.07	7.48	1.86	1.47	0.58	0.11
12	1.74	0.86	0.49	18.47	7.59	1.85	1.42	0.59	0.11
22	1.68	0.87	0.48	17.91	7.71	1.84	1.38	0.59	0.11
April 1	1.64	0.89	0.48	17.39	7.84	1.82	1.34	0.60	0.11
11	1.59	0.90	0.48	16.93	7.97	1.81	1.31	0.61	0.11
21	1.55	0.92	0.47	16.53	8.10	1.79	1.28	0.62	0.11
May 1	1.52	0.93	0.47	16.19	8.23	1.77	1.25	0.63	0.11
11	1.50	0.95	0.46	15.90	8.35	1.75	1.23	0.64	0.11
21	1.48	0.96	0.46	15.66	8.46	1.74	1.21	0.65	0.10
31	1.46	0.97	0.46	15.47	8.55	1.73	1.20	0.66	0.10
June 10	1.44	0.97	0.46	15.33	8.61	1.72	1.19	0.66	0.10
20	1.43	0.98	0.45	15.25	8.64	1.71	1.18	0.67	0.10
30	1.43	0.98	0.45	15.22	8.65	1.71	1.18	0.67	0.10
July 10	1.43	0.98	0.45	15.24	8.63	1.71	1.18	0.67	0.10
20	1.44	0.97	0.45	15.30	8.59	1.71	1.18	0.66	0.10
30	1.45	0.96	0.45	15.41	8.52	1.71	1.19	0.66	0.10
Aug. 9	1.47	0.95	0.45	15.58	8.42	1.72	1.20	0.65	0.10
19	1.49	0.94	0.46	15.80	8.31	1.72	1.21	0.64	0.10
29	1.51	0.93	0.46	16.07	8.19	1.73	1.23	0.63	0.10
Sept. 8	1.54	0.91	0.46	16.39	8.06	1.74	1.25	0.62	0.10
18	1.58	0.90	0.47	16.76	7.93	1.75	1.28	0.61	0.11
28	1.62	0.88	0.47	17.18	7.80	1.76	1.31	0.60	0.11
Oct. 8	1.66	0.87	0.47	17.66	7.67	1.78	1.34	0.59	0.11
18	1.71	0.86	0.48	18.19	7.55	1.80	1.38	0.58	0.11
28	1.77	0.84	0.48	18.75	7.45	1.82	1.42	0.58	0.11
Nov. 7	1.81	0.83	0.48	19.33	7.35	1.83	1.46	0.57	0.11
17	1.87	0.82	0.49	19.93	7.27	1.84	1.51	0.56	0.11
27	1.92	0.82	0.49	20.51	7.20	1.85	1.56	0.56	0.11
Dec. 7	1.97	0.81	0.49	21.04	7.15	1.86	1.60	0.55	0.11
17	2.02	0.81	0.50	21.50	7.11	1.87	1.64	0.55	0.12
27	2.06	0.80	0.50	21.85	7.09	1.88	1.66	0.55	0.12
37	2.08	0.80	0.50	22.06	7.09	1.89	1.68	0.55	0.12

Horizontal Parallax of Neptune, 0″.30, Jan. 1 to Jan. 19; July 6 to Sept. 10; after Nov. 19.
" " " 0″.29, Jan. 20 to July 5.
" " " 0″.31, Sept. 11 to Nov. 18.

SUN'S COÖRDINATES, 1871.

Date 1871.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	⊙ True Long.	[illegible]	Lat.	[illegible]
Jan 10	+ [illegible]	[illegible]	– [illegible]	[illegible]	– [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible] equinox of January 0.0

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1871.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Jan. 31.5	+.6589461	9873	−.6723674	3314	−.2917354	7250	311° 57′ 26″.4	37″.9	−0″.14	9.9 936985
Feb. 1.0	.6654558	4965	.6670411	0050	.2894240	4135	312 27 51.8	63.2	−0.07	937307
1.5	.6719142	9543	.6616636	6274	.2870905	0798	312 58 16.9	28.2	+0.01	937635
2.0	.6783207	3602	.6562353	1990	.2847349	7241	313 28 41.7	52.9	0.06	937969
2.5	.6846749	7138	.6507567	7203	.2823574	3465	313 59 6.1	17.3	0.12	938309
3.0	.6909765	:0149	.6452281	1917	.2799582	9472	314 29 30.2	41.4	0.19	938654
3.5	.6972249	2627	.6396500	6135	.2775376	5264	314 59 54.0	65.1	0.25	939006
4.0	.7034198	4571	.6340229	:9863	.2750958	0845	315 30 17.5	28.6	0.31	939364
4.5	.7095607	5974	.6283471	3104	.2726329	6215	316 0 40.7	51.7	0.37	939728
5.0	.7156472	6834	.6226231	5864	.2701491	1376	316 31 3.6	14.5	0.42	940098
5.5	.7216787	7143	.6168513	8145	.2676447	6331	317 1 26.1	36.9	0.47	940474
6.0	.7276549	6900	.6110321	:9953	.2651197	1080	317 31 48.3	59.1	0.51	940856
6.5	.7335754	6099	.6051659	1290	.2625743	5625	318 2 10.3	21.0	0.54	941244
7.0	.7394398	4738	.5992532	2163	.2600088	:9969	318 32 32.0	42.6	0.56	941637
7.5	.7452476	2810	.5932945	2576	.2574232	4112	319 2 53.4	64.0	0.57	942036
8.0	.7509985	:0314	.5872901	2531	.2548179	8058	319 33 14.6	25.2	0.58	942441
8.5	.7566921	7245	.5812405	2035	.2521931	1809	320 3 35.5	46.0	0.58	942851
9.0	.7623279	3598	.5751461	1091	.2495489	5366	320 33 56.0	66.5	0.57	943266
9.5	.7679053	9366	.5690074	:9704	.2468855	8731	321 4 16.2	26.6	0.55	943686
10.0	.7734240	4548	.5628248	7878	.2442030	1905	321 34 36.2	46.5	0.53	944112
10.5	.7788835	9138	.5565987	5617	.2415017	4891	322 4 55.9	66.2	0.50	944543
11.0	.7842835	3133	.5503296	2926	.2387817	7691	322 35 15.3	25.5	0.47	944978
11.5	.7896235	6527	.5440180	:9810	.2360433	0306	323 5 34.4	44.5	0.43	945417
12.0	.7949031	9318	.5376642	6272	.2332867	2739	323 35 53.3	63.4	0.38	945860
12.5	.8001219	1501	.5312687	2317	.2305120	4991	324 6 11.9	21.9	0.33	946307
13.0	.8052795	3072	.5248320	7950	.2277194	7065	324 36 30.2	40.2	0.28	946758
13.5	.8103755	4027	.5183547	3177	.2249093	8963	325 6 48.2	58.1	0.22	947212
14.0	.8154094	4361	.5118371	8001	.2220818	0687	325 37 5.9	15.8	0.16	947670
14.5	.8203809	4071	.5052798	2428	.2192370	2238	326 7 23.3	33.1	0.10	948131
15.0	.8252895	3152	.4986834	6465	.2163752	3620	326 37 40.4	50.2	+0.03	948596
15.5	.8301347	1599	.4920484	0115	.2134967	4834	327 7 57.2	66.9	−0.03	949064
16.0	.8349162	9409	.4853754	3386	.2106017	5884	327 38 13.6	23.3	0.10	949534
16.5	.8396336	6578	.4786649	6282	.2076905	6771	328 8 29.7	39.3	0.17	950007
17.0	.8442866	3103	.4719174	8808	.2047633	7499	328 38 45.4	54.9	0.23	950482
17.5	.8488747	8979	.4651336	0970	.2018203	8068	328 59 0.8	10.2	0.29	950959
18.0	.8533976	4203	.4583140	2775	.1988616	8481	329 39 15.8	25.1	0.35	951438
18.5	.8578549	8771	.4514591	4226	.1958877	8742	330 9 30.4	39.7	0.40	951920
19.0	.8622462	2680	.4445694	5330	.1928988	8852	330 39 44.6	53.9	0.45	952404
19.5	.8665713	5926	.4376455	6091	.1898949	8813	331 9 58.4	67.6	0.49	952890
20.0	.8708297	8506	.4306881	6518	.1868763	8626	331 40 11.7	20.9	0.52	953378
20.5	.8750211	0415	.4236978	6616	.1838434	8297	332 10 24.6	33.8	0.54	953868
21.0	.8791452	1652	.4166750	6389	.1807963	7825	332 40 37.1	46.2	0.56	954360
21.5	.8832019	2214	.4096202	5841	.1777353	7215	333 10 49.2	58.2	0.57	954853
22.0	.8871908	2099	.4025341	4981	.1746606	6467	333 41 0.8	9.8	0.57	955348
22.5	.8911115	1301	.3954174	3815	.1715726	5587	334 11 12.0	20.9	0.57	955845
23.0	.8949638	9820	.3882706	2348	.1684715	4576	334 41 22.7	31.6	0.57	956345
23.5	.8987475	7652	.3810943	0586	.1653577	3438	335 11 33.1	41.8	0.55	956847
24.0	.9024624	4797	.3738892	8536	.1622313	2173	335 41 42.7	51.4	0.53	957351
24.5	.9061082	1250	.3666559	6204	.1590926	0786	336 11 52.0	60.6	0.50	957857
25.0	.9096847	7011	.3593949	3595	.1559420	9280	336 42 0.7	9.3	0.46	958365
25.5	.9131916	2075	.3521069	0716	.1527796	7656	337 12 8.9	17.4	0.41	958876
26.0	.9166288	6443	.3447924	7572	.1496056	5916	337 42 16.6	25.1	0.36	959390
26.5	.9199961	:0112	.3374520	4169	.1464203	4063	338 12 23.8	32.2	0.31	959906
27.0	.9232932	3079	.3300863	0513	.1432241	2101	338 42 30.5	38.9	0.25	960425
27.5	.9265200	5343	.3226959	6610	.1400171	0031	339 12 36.7	45.0	0.19	960947
28.0	.9296763	6902	.3152814	2466	.1367996	7856	339 42 42.4	50.7	0.13	961472
28.5	.9327619	7754	.3078433	8086	.1335719	5579	340 12 47.6	55.8	−0.07	962001
Mar. 1.0	.9357767	7898	.3003822	3476	.1303342	3202	340 42 52.2	60.4	0.00	962533
1.5	.9387206	7333	.2928986	8641	.1270867	0727	341 12 56.2	64.4	+0.07	963069
2.0	.9415933	6056	.2853932	3588	.1238298	8158	341 42 59.7	67.8	0.14	963608
2.5	+.9443947	4066	−.2778665	8322	−.1205637	5497	342 13 2.7	10.8	+0.20	964151

NOTE.— : Denotes a change in the preceding figure.

SUN'S COÖRDINATES, 1871.

Date. 1871.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.	λ'	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
										9.9
Mar. 3.0	+.9471247	1362	−.2703190	2849	−.1172886	2747	342° 43′ 5″.3	13″.3	+0″.26	964697
3.5	.9497832	7943	.2627513	7173	.1140048	;9909	343 13 7.4	15.3	0.31	965247
4.0	.9523701	3808	.2551640	1301	.1107125	6986	343 43 8.9	16.8	0.36	965801
4.5	.9548851	8954	.2475576	5238	.1074119	3980	344 13 9.9	17.7	0.40	966359
5.0	.9573281	3380	.2399326	8990	.1041033	0895	344 43 10.5	18.3	0.44	966921
5.5	.9596990	7085	.2322895	2560	.1007869	7731	345 13 10.6	18.3	0.47	967487
6.0	.9619977	;0068	.2246290	5957	.0974629	4491	345 43 10.2	17.9	0.50	968056
6.5	.9642241	2328	.2169516	9184	.0941316	1178	346 13 9.3	17.0	0.52	968629
7.0	.9663779	3863	.2092577	2247	.0907933	7796	346 43 8.0	15.6	0.53	969205
7.5	.9684591	4671	.2015481	5152	.0874481	4344	347 13 6.2	13.7	0.54	969785
8.0	.9704676	4753	.1938232	7905	.0840963	0827	347 43 4.0	11.4	0.54	970369
8.5	.9724032	4105	.1860835	0509	.0807381	7245	348 13 1.3	8.7	0.53	970956
9.0	.9742659	2729	.1783297	2973	.0773738	3603	348 42 58.2	65.6	0.52	971546
9.5	.9760554	0620	.1705623	5300	.0740037	;9902	349 12 54.6	62.0	0.50	972139
10.0	.9777716	7779	.1627818	7497	.0706279	6145	349 42 50.6	57.9	0.47	972736
10.5	.9794143	4202	.1549887	9568	.0672467	2333	350 12 46.2	53.4	0.43	973336
11.0	.9809835	9891	.1471836	1519	.0638603	8470	350 42 41.3	48.5	0.39	973938
11.5	.9824792	4844	.1393671	3355	.0604691	4558	351 12 36.0	43.2	0.34	974543
12.0	.9839011	9060	.1315398	5084	.0570732	0600	351 42 30.3	37.4	0.28	975150
12.5	.9852490	2536	.1237022	6710	.0536728	6596	352 12 24.2	31.2	0.22	975759
13.0	.9865229	5272	.1158550	8240	.0502683	2552	352 42 17.7	24.6	0.16	976370
13.5	.9877228	7267	.1079986	9677	.0468599	8468	353 12 10.7	17.6	0.10	976983
14.0	.9888485	8521	.1001337	1030	.0434478	4348	353 42 3.3	10.2	+0.03	977597
14.5	.9898998	9031	.0922609	2304	.0400323	0193	354 11 55.5	62.3	−0.03	978213
15.0	.9908767	8797	.0843809	3506	.0366136	6007	354 41 47.2	54.0	0.10	978829
15.5	.9917792	7819	.0764942	4641	.0331919	1790	355 11 38.5	45.3	0.17	979446
16.0	.9926071	6095	.0686014	5715	.0297676	7548	355 41 29.5	36.2	0.23	980064
16.5	.9933604	3625	.0607032	6735	.0263410	3283	356 11 20.0	26.6	0.29	980683
17.0	.9940390	0408	.0528001	7706	.0229123	8997	356 41 10.0	16.6	0.35	981302
17.5	.9946429	6444	.0448928	8635	.0194817	4691	357 10 59.6	66.1	0.40	981922
18.0	.9951719	1731	.0369820	9529	.0160494	0369	357 40 48.7	55.2	0.45	982542
18.5	.9956261	6270	.0290682	0393	.0126158	6034	358 10 37.3	43.7	0.49	983162
19.0	.9960054	0061	.0211521	1234	.0091811	1688	358 40 25.4	31.8	0.53	983781
19.5	.9963098	3102	.0132343	2058	.0057457	7334	359 10 13.1	19.4	0.55	984399
20.0	.9965393	5394	−.0053155	2872	−.0023098	2976	359 40 0.3	6.6	0.58	985017
20.5	.9966939	6937	+.0026038	6319	+.0011264	1385	0 9 47.0	53.3	0.59	985634
21.0	.9967735	7731	.0105229	5508	.0045625	5745	0 39 33.2	39.5	0.60	986251
21.5	.9967782	7776	.0184412	4689	.0079984	;0104	1 9 18.9	25.1	0.60	986867
22.0	.9967080	7071	.0263581	3856	.0114336	4455	1 39 4.1	10.3	0.59	987483
22.5	.9965630	5619	.0342729	3002	.0148679	8797	2 8 48.8	54.9	0.57	988097
23.0	.9963433	3419	.0421850	2121	.0183011	3128	2 38 32.9	39.0	0.55	988711
23.5	.9960492	0476	.0500937	1206	.0217328	7445	3 8 16.5	22.5	0.52	989324
24.0	.9956806	6787	.0579983	;0250	.0251628	1744	3 37 59.5	65.5	0.48	989937
24.5	.9952374	2353	.0658985	9250	.0285909	6024	4 7 41.9	47.9	0.44	990549
25.0	.9947197	7174	.0737935	8197	.0320168	0282	4 37 23.8	29.7	0.39	991161
25.5	.9941278	1253	.0816826	7086	.0354402	4516	5 7 5.1	10.9	0.34	991772
26.0	.9934617	4589	.0895653	5911	.0388607	8720	5 36 45.8	51.6	0.28	992383
26.5	.9927217	7187	.0964409	4665	.0422782	2894	6 6 25.9	31.7	0.22	992994
27.0	.9919078	9046	.1053089	3342	.0456924	7035	6 36 5.5	11.2	0.16	993604
27.5	.9910201	0167	.1131686	1937	.0491030	1140	7 5 44.5	50.1	0.10	994214
28.0	.9900588	0552	.1210195	0444	.0525099	5208	7 35 22.9	28.5	−0.03	994824
28.5	.9890240	0202	.1288612	8859	.0559127	9235	8 5 0.7	6.2	+0.03	995435
29.0	.9879160	9120	.1366929	7173	.0593112	3219	8 34 37.9	43.4	0.10	996046
29.5	.0867348	7306	.1445141	5383	.0627052	7159	9 4 14.6	20.0	0.16	996657
30.0	.9854805	4761	.1523243	3483	.0660944	1050	9 33 50.7	56.1	0.23	997268
30.5	.9841534	1489	.1601230	1468	.0694785	4890	10 3 26.2	31.6	0.29	997881
31.0	.9827536	7489	.1679097	9332	.0728574	8678	10 33 1.1	6.5	0.35	998494
31.5	.9812814	2765	.1756836	7069	.0762307	2410	11 2 35.5	40.9	0.40	999108
Apr. 1.0	.9797369	7318	.1834443	4673	.0795983	6985	11 32 9.3	14.6	0.45	999723
1.5	.9781202	1150	.1911912	2139	.0829599	9700	12 1 42.6	47.8	0.49	◆000339
2.0	+.9764315	4261	+.1989237	9461	+.0863154	3254	12 31 15.3	20.5	+0.52	000955

◆ The first figures of this and the following logarithms are 0.0.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1871.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Apr. 2.5	+.9746711	6655	+.2066415	6636	+.0896643	6741	13° 0′ 47″.5	52″.6	+0″.54	0.0 001573
3.0	.9728390	8333	.2143441	3659	.0930065	0162	13 30 19.1	24.2	0.56	002192
3.5	.9709355	9296	.2220309	0524	.0963418	3514	13 59 50.2	55.3	0.57	002812
4.0	.9689606	9546	.2297013	7226	.0996699	6794	14 29 20.8	25.8	0.57	003433
4.5	.9669146	9084	.2373549	3759	.1029907	:0001	14 58 50.9	55.8	0.56	004055
5.0	.9647977	7914	.2449911	:0119	.1063039	3132	15 28 20.4	25.3	0.55	004678
5.5	.9626101	6037	.2526094	6299	.1096093	6185	15 57 49.4	54.3	0.53	005301
6.0	.9603519	3454	.2602091	2293	.1129067	9158	16 27 18.0	22.8	0.50	005925
6.5	.9580232	0166	.2677899	8098	.1161958	2048	16 56 46.1	50.8	0.46	006551
7.0	.9556242	6174	.2753513	3710	.1194764	4853	17 26 13.7	18.4	0.42	007177
7.5	.9531552	1483	.2828927	9121	.1227484	7572	17 55 40.8	45.5	0.37	007804
8.0	.9506163	6093	.2904135	4326	.1260115	0202	18 25 7.5	12.1	0.32	008432
8.5	.9480077	0006	.2979134	9322	.1292653	2709	18 54 33.7	38.3	0.27	009060
9.0	.9453295	3223	.3053917	4102	.1325098	5183	19 23 59.5	64.0	0.21	009688
9.5	.9425820	5747	.3128479	8661	.1357448	7532	19 53 24.8	29.2	0.15	010316
10.0	.9397654	7580	.3202814	2993	.1389699	9782	20 22 49.7	54.0	0.09	010943
10.5	.9368798	8723	.3276919	7095	.1421850	1932	20 52 14.2	18.4	+0.03	011570
11.0	.9339253	9178	.3350788	0961	.1453897	3978	21 21 38.3	42.4	−0.04	012197
11.5	.9309023	8947	.3424414	4584	.1485839	5919	21 51 1.9	6.0	0.10	012823
12.0	.9278109	8033	.3497793	7961	.1517673	7751	22 20 25.1	29.2	0.17	013448
12.5	.9246514	6437	.3570919	1084	.1549399	9476	22 49 47.9	51.9	0.23	014072
13.0	.9214239	4162	.3643786	3948	.1581013	1089	23 19 10.3	14.2	0.29	014694
13.5	.9181287	1209	.3716389	6548	.1612512	2587	23 48 32.2	36.1	0.34	015315
14.0	.9147660	7582	.3788723	8880	.1643894	3968	24 17 53.7	57.6	0.39	015934
14.5	.9113361	3282	.3860781	0935	.1675157	5230	24 47 14.8	18.6	0.44	016551
15.0	.9078392	8313	.3932558	2709	.1706299	6371	25 16 35.4	39.2	0.48	017166
15.5	.9042756	2677	.4004049	4197	.1737317	7388	25 45 55.6	59.3	0.51	017778
16.0	.9006454	6375	.4075249	5395	.1768209	8279	26 15 15.3	19.0	0.54	018388
16.5	.8969490	9410	.4146153	6296	.1798972	9041	26 44 34.6	38.3	0.55	018995
17.0	.8931867	1787	.4216754	6894	.1829605	9673	27 13 53.5	57.1	0.56	019600
17.5	.8893588	3508	.4287046	7183	.1860104	0171	27 43 11.9	15.3	0.56	020202
18.0	.8854656	4576	.4357024	7158	.1890468	0534	28 12 29.9	33.4	0.56	020800
18.5	.8815074	4994	.4426684	6815	.1920695	0760	28 41 47.5	50.9	0.54	021395
19.0	.8774846	4766	.4496020	6148	.1950782	0846	29 11 4.5	7.9	0.52	021987
19.5	.8733975	3895	.4565027	5152	.1980725	0788	29 40 21.0	24.3	0.49	022576
20.0	.8692464	2385	.4633700	3823	.2010523	0585	30 9 37.1	40.3	0.46	023161
20.5	.8650317	0238	.4702032	2152	.2040175	0236	30 38 52.8	55.9	0.42	023743
21.0	.8607538	7459	.4770020	0137	.2069678	9738	31 8 7.9	11.0	0.37	024322
21.5	.8564131	4052	.4837656	7772	.2099028	9087	31 37 22.5	25.5	0.32	024898
22.0	.8520099	0021	.4904941	5052	.2128224	8282	32 6 36.6	39.6	0.27	025470
22.5	.8475446	5368	.4971863	1971	.2157264	7321	32 35 50.3	53.2	0.21	026039
23.0	.8430175	0098	.5038420	8525	.2186146	6202	33 5 3.4	6.3	0.15	026605
23.5	.8384290	4213	.5104608	4710	.2214868	4923	33 34 16.0	18.8	0.09	027168
24.0	.8337795	7719	.5170421	0521	.2243427	3481	34 3 28.0	30.8	−0.03	027727
24.5	.8290696	0620	.5235854	5951	.2271821	1874	34 32 39.5	42.2	+0.04	028283
25.0	.8242996	2921	.5300904	0998	.2300049	0101	35 1 50.5	53.2	0.11	028836
25.5	.8194699	4625	.5365566	5657	.2328109	8160	35 31 1.0	3.6	0.18	029386
26.0	.8145809	5736	.5429836	9924	.2355999	6049	36 0 11.0	13.5	0.25	029934
26.5	.8096331	6259	.5493708	3793	.2383716	3765	36 29 20.4	22.9	0.31	030479
27.0	.8046269	6198	.5557180	7262	.2411259	1307	36 58 29.3	31.8	0.37	031022
27.5	.7995628	5558	.5620248	0327	.2438626	8673	37 27 37.8	40.2	0.42	031563
28.0	.7944411	4343	.5682908	2984	.2465814	5860	37 56 45.8	48.2	0.47	032101
28.5	.7892623	2556	.5745154	5227	.2492823	2867	38 25 53.2	55.5	0.51	032638
29.0	.7840267	0201	.5806982	7052	.2519651	9694	38 55 0.1	2.3	0.54	033173
29.5	.7787347	7282	.5868389	8456	.2546297	6339	39 24 6.5	8.6	0.57	033707
30.0	.7733867	3804	.5929371	9435	.2572759	2800	39 53 12.3	14.3	0.59	034238
30.5	.7679833	9771	.5989924	9985	.2599033	9073	40 22 17.7	19.6	0.60	034768
May 1.0	.7625248	5188	.6050044	0102	.2625119	5158	40 51 22.6	24.5	0.61	035296
1.5	.7570117	0058	.6109728	9783	.2651016	1054	41 20 27.1	28.9	0.60	035822
2.0	.7514443	4386	.6168972	9025	.2676722	6759	41 49 31.1	32.8	0.59	036347
2.5	+.7458230	8174	+.6227774	7824	+.2702235	2271	42 18 34.6	36.3	+0.57	036871

NOTE.—The accented letters correspond to the mean equinox and equator of January 0d.0.

Date. 1871.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
May 3.0	+.7401483	1429	+.6286128	6175	+.2727553	7588	42° 47′ 37″.7	39″.4	+0″.54	0.0 037393
3.5	.7344207	4155	.6344029	4073	.2752674	2708	43 16 40.4	42.0	0.51	037914
4.0	.7286405	6355	.6401474	1516	.2777598	7632	43 45 42.7	44.2	0.47	038433
4.5	.7228081	8033	.6458463	8502	.2802323	2356	44 14 44.6	46.0	0.43	038951
5.0	.7169239	9193	.6514990	5026	.2826847	6879	44 43 46.0	47.3	0.38	039467
5.5	.7109883	9839	.6571051	1084	.2851169	1200	45 12 47.0	48.2	0.33	039982
6.0	.7050017	9975	.6626643	6674	.2875287	5317	45 41 47.6	48.8	0.27	040496
6.5	.6989646	9606	.6681762	1790	.2899200	9229	46 10 47.9	49.0	0.21	041008
7.0	.6928773	8735	.6736404	6430	.2922905	2934	46 39 47.8	48.8	0.15	041518
7.5	.6867403	7367	.6790565	0588	.2946402	6430	47 8 47.3	48.3	0.09	042027
8.0	.6805540	5506	.6844241	4262	.2969688	9716	47 37 46.4	47.4	+0.02	042534
8.5	.6743187	3155	.6897430	7448	.2992763	2790	48 6 45.2	46.1	−0.05	043039
9.0	.6680349	0320	.6950127	0143	.3015625	5651	48 35 43.7	44.5	0.12	043541
9.5	.6617030	7003	.7002329	2342	.3038272	8298	49 4 41.9	42.6	0.18	044040
10.0	.6553234	3210	.7054034	4045	.3060702	0727	49 33 39.8	40.4	0.24	044537
10.5	.6488965	8943	.7105236	5244	.3082915	2939	50 2 37.4	37.9	0.29	045031
11.0	.6424228	4209	.7155930	5936	.3104908	4931	50 31 34.7	35.1	0.34	045522
11.5	.6359028	9011	.7206113	6117	.3126679	6702	51 0 31.6	32.0	0.39	046009
12.0	.6293368	3354	.7255782	5784	.3148227	8249	51 29 28.2	28.6	0.43	046493
12.5	.6227254	7243	.7304932	4931	.3169551	9572	51 58 24.5	24.8	0.46	046973
13.0	.6160691	0683	.7353560	3557	.3190649	0669	52 27 20.5	20.8	0.49	047450
13.5	.6093683	3678	.7401663	1658	.3211520	1540	52 56 16.2	16.4	0.51	047923
14.0	.6026235	6233	.7449237	9230	.3232161	2180	53 25 11.6	11.7	0.52	048391
14.5	.5958352	8353	.7496277	6268	.3252572	2591	53 54 6.7	6.7	0.52	048855
15.0	.5890038	0042	.7542781	2770	.3272751	2769	54 23 1.5	1.4	0.52	049315
15.5	.5821300	1307	.7588746	8733	.3292696	2714	54 51 56.0	55.9	0.51	049770
16.0	.5752142	2152	.7634167	4152	.3312405	2422	55 20 50.2	50.0	0.50	050220
16.5	.5682569	2582	.7679041	9024	.3331876	1893	55 49 44.1	43.9	0.47	050666
17.0	.5612585	2602	.7723365	3346	.3351109	1125	56 18 37.7	37.4	0.44	051106
17.5	.5542197	2217	.7767135	7114	.3370103	0119	56 47 31.0	30.6	0.40	051542
18.0	.5471409	1433	.7810347	0324	.3388855	8870	57 16 23.9	23.4	0.35	051972
18.5	.5400229	0256	.7852999	2974	.3407364	7379	57 45 16.5	15.9	0.30	052396
19.0	.5328662	8692	.7895086	5059	.3425629	5643	58 14 8.7	8.0	0.24	052814
19.5	.5256714	6748	.7936606	6577	.3443647	3661	58 42 60.6	59.8	0.18	053227
20.0	.5184390	4428	.7977557	7527	.3461418	1431	59 11 52.2	51.3	0.12	053635
20.5	.5111695	1736	.8017935	7903	.3478941	8954	59 40 43.4	42.5	−0.06	054038
21.0	.5038634	8679	.8057738	7705	.3496215	6228	60 9 34.2	33.3	+0.01	054436
21.5	.4965214	5262	.8096964	6929	.3513239	3252	60 38 24.7	23.7	0.08	054829
22.0	.4891441	1493	.8135609	5573	.3530010	0022	61 7 14.9	13.8	0.15	055216
22.5	.4817320	7375	.8173670	3632	.3546528	6540	61 36 4.8	3.6	0.22	055597
23.0	.4742857	2916	.8211147	1108	.3562792	2804	62 4 54.3	53.0	0.28	055972
23.5	.4668057	8120	.8248037	7997	.3578801	8813	62 33 43.4	42.0	0.34	056343
24.0	.4592927	2994	.8284337	4296	.3594553	4564	63 2 32.1	30.6	0.40	056709
24.5	.4517473	7544	.8320044	0002	.3610049	0060	63 31 20.5	18.9	0.45	057071
25.0	.4441700	1775	.8355156	5113	.3625287	5298	64 0 8.5	6.8	0.49	057428
25.5	.4365613	5692	.8389672	9628	.3640265	0276	64 28 56.1	54.4	0.53	057781
26.0	.4289219	9302	.8423589	3544	.3654983	4993	64 57 43.4	41.6	0.57	058129
26.5	.4212523	2610	.8456907	6861	.3669441	9451	65 26 30.3	28.5	0.60	058473
27.0	.4135532	5623	.8489623	9576	.3683638	3648	65 55 16.8	14.9	0.62	058813
27.5	.4058253	8348	.8521735	1687	.3697572	7582	66 24 3.0	1.0	0.64	059150
28.0	.3980690	0789	.8553241	3192	.3711242	1252	66 52 48.9	46.8	0.65	059482
28.5	.3902848	2951	.8584140	4090	.3724648	4658	67 21 34.5	32.3	0.65	059811
29.0	.3824733	4840	.8614430	4380	.3737789	7799	67 50 19.7	17.4	0.65	060136
29.5	.3746351	6462	.8644110	4059	.3750666	0676	68 19 4.6	2.2	0.63	060457
30.0	.3667707	7822	.8673178	3127	.3763277	3287	68 47 49.1	46.6	0.61	060775
30.5	.3588806	8925	.8701631	1579	.3775622	5632	69 16 33.3	30.7	0.58	061090
31.0	.3509654	9777	.8729469	9417	.3787699	7709	69 45 17.3	14.6	0.54	061401
31.5	.3430255	0382	.8756692	6639	.3799508	9518	70 13 61.0	58.3	0.50	061709
June 1.0	.3350615	0747	.8783297	3244	.3811048	1057	70 42 44.4	41.7	0.45	062014
1.5	.3270740	0876	.8809282	9228	.3822319	2328	71 11 27.6	24.8	0.40	062316
2.0	+.3190636	0776	+.8834646	4592	+.3833321	3330	71 40 10.5	7.6	+0.35	062615

NOTE.—The accented letters correspond to the mean equinox and equator of Jan. $0^d.0$.

Date. 1871.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
June 2.5	+.3110307	0451	+.8859387	9333	+.3844053	4062	72° 8′ 53″.2	50″.2	+0″.29	0.0 062911
3.0	.3029758	9907	.8883504	3450	.3854514	4523	72 37 35.6	32.5	0.23	063204
3.5	.2948996	9149	.8906996	6942	.3864704	4713	73 6 17.8	14.6	0.16	063494
4.0	.2868027	8185	.8929861	9807	.3874622	4631	73 34 59.8	56.5	0.09	063780
4.5	.2786854	7016	.8952097	2043	.3884267	4276	74 3 41.6	38.3	+0.02	064063
5.0	.2705482	5649	.8973704	3650	.3893639	3648	74 32 23.2	19.8	—0.04	064343
5.5	.2623918	4089	.8994679	4625	.3902737	2746	75 1 4.6	1.1	0.10	064620
6.0	.2542168	2344	.9015021	4967	.3911561	1570	75 29 45.8	42.2	0.16	064893
6.5	.2460237	0417	.9034729	4675	.3920109	0119	75 58 26.9	23.2	0.22	065163
7.0	.2378129	8314	.9053802	3749	.3928381	8391	76 27 7.8	4.0	0.27	065430
7.5	.2295851	6040	.9072237	2184	.3936377	6387	76 55 48.6	44.7	0.32	065693
8.0	.2213407	3601	.9090034	9982	.3944096	4106	77 24 29.2	25.2	0.36	065952
8.5	.2130802	1000	.9107190	7138	.3951538	1548	77 53 9.7	5.6	0.40	066207
9.0	.2048042	8245	.9123705	3654	.3958702	8713	78 21 50.1	45.9	0.43	066458
9.5	.1965134	5341	.9139576	9525	.3965587	5598	78 50 30.4	26.2	0.45	066704
10.0	.1882083	2295	.9154802	4752	.3972193	2205	79 19 10.5	6.2	0.47	066946
10.5	.1798895	9111	.9169382	9333	.3978519	8531	79 47 50.5	46.1	0.48	067184
11.0	.1715576	5797	.9183314	3266	.3984564	4577	80 16 30.5	26.0	0.48	067415
11.5	.1632132	2357	.9196597	6550	.3990328	0341	80 45 10.4	5.8	0.47	067642
12.0	.1548570	8800	.9209230	9184	.3995810	5824	81 13 50.2	45.5	0.45	067863
12.5	.1464895	5130	.9221211	1166	.4001010	1024	81 42 29.8	25.0	0.43	068079
13.0	.1381114	1354	.9232540	2497	.4005927	5942	82 11 9.4	4.5	0.40	068289
13.5	.1297232	7477	.9243215	3171	.4010560	0575	82 39 48.9	43.9	0.36	068493
14.0	.1213256	3505	.9253235	3195	.4014910	4926	83 8 28.3	23.2	0.32	068692
14.5	.1129192	9446	.9262599	2560	.4018976	8992	83 37 7.6	2.4	0.27	068884
15.0	.1045046	5305	.9271307	1270	.4022758	2775	84 5 46.7	41.5	0.22	069070
15.5	.0960825	1089	.9279358	9322	.4026254	6271	84 34 25.8	20.5	0.16	069250
16.0	.0876534	6802	.9286751	6717	.4029465	9483	85 2 64.7	59.3	0.10	069423
16.5	.0792180	2453	.9293485	3453	.4032390	2409	85 31 43.5	38.0	—0.04	069590
17.0	.0707768	8045	.9299560	9530	.4035030	5050	86 0 22.2	16.6	+0.02	069751
17.5	.0623306	3588	.9304976	4948	.4037384	7404	86 28 60.8	55.1	0.09	069905
18.0	.0538800	9086	.9309733	9707	.4039452	9473	86 57 39.2	33.4	0.16	070053
18.5	.0454255	4546	.9313830	3806	.4041233	1255	87 26 17.5	11.6	0.23	070194
19.0	.0369678	9973	.9317266	7244	.4042727	2750	87 54 55.7	49.7	0.29	070329
19.5	.0285076	5376	.9320042	0022	.4043935	3959	88 23 33.8	27.8	0.35	070457
20.0	.0200456	0760	.9322158	2141	.4044856	4881	88 52 11.7	5.6	0.41	070579
20.5	.0115823	6132	.9323614	3599	.4045491	5517	89 20 49.5	43.3	0.47	070695
21.0	+.0031183	1496	.9324410	4398	.4045840	5867	89 49 27.2	20.9	0.52	070804
21.5	—.0053455	3137	.9324546	4536	.4045902	5929	90 17 64.8	58.4	0.57	070907
22.0	.0138086	7764	.9324022	4015	.4045677	5705	90 46 42.2	35.7	0.61	071004
22.5	.0222704	2377	.9322840	2835	.4045166	5195	91 15 19.4	12.8	0.64	071096
23.0	.0307303	6972	.9321000	0998	.4044368	4398	91 43 56.5	49.8	0.67	071182
23.5	.0391876	1540	.9318501	8502	.4043285	3316	92 12 33.5	26.7	0.68	071262
24.0	.0476417	6077	.9315345	5349	.4041917	1949	92 41 10.3	3.4	0.69	071337
24.5	.0560921	0577	.9311533	1540	.4040263	0296	93 9 47.0	40.0	0.69	071406
25.0	.0645382	5034	.9307066	7076	.4038324	8358	93 38 23.5	16.5	0.68	071470
25.5	.0729792	9440	.9301944	1957	.4036101	6136	94 6 59.9	52.8	0.66	071529
26.0	.0814147	3791	.9296169	6185	.4033594	3630	94 35 36.1	28.9	0.64	071584
26.5	.0898441	8081	.9289742	9760	.4030804	0841	95 4 12.3	5.0	0.61	071634
27.0	.0982668	2304	.9282661	2683	.4027731	7769	95 32 48.3	40.9	0.58	071679
27.5	.1066823	6455	.9274929	4954	.4024375	4414	96 1 24.2	16.7	0.54	071720
28.0	.1150900	0528	.9266547	6576	.4020736	0776	96 29 60.0	52.4	0.49	071757
28.5	.1234892	4516	.9257515	7547	.4016815	6856	96 58 35.7	28.0	0.44	071790
29.0	.1318794	8414	.9247835	7871	.4012612	2655	97 27 11.4	3.6	0.39	071819
29.5	.1402602	2218	.9237507	7546	.4008128	8172	97 55 47.0	39.2	0.33	071844
30.0	.1486310	5922	.9226532	6575	.4003363	3408	98 24 22.6	14.7	0.27	071866
30.5	.1569912	9520	.9214911	4958	.3998317	8363	98 52 58.1	50.2	0.21	071884
July 1.0	.1653404	3009	.9202644	2695	.3992992	3040	99 21 33.6	25.6	0.14	071897
1.5	.1736778	6379	.9189733	9788	.3987387	7436	99 50 9.1	1.0	0.08	071907
2.0	.1820030	9627	.9176179	6238	.3981503	1553	100 18 44.5	36.3	+0.01	071913
2.5	—.1903156	2749	+.9161983	2046	+.3975340	5391	100 47 19.9	11.6	—0.05	071916

NOTE.—The accented letters correspond to the mean equinox and equator of Jan. 0d.0

Date. 1871.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							° ′ ″	″	″	0.0
July 3.0	—.1986150	5740	+.9147146	7213	+.3968900	8953	101 15 55.3	46.9	—0.11	071915
3.5	.2069004	8590	.9131668	1739	.3962182	2236	101 44 30.8	22.3	0.17	071911
4.0	.2151714	1297	.9115551	5626	.3955186	5241	102 12 66.2	57.6	0.22	071903
4.5	.2234275	3854	.9098796	8875	.3947914	7970	102 41 41.7	33.0	0.37	071891
5.0	.2316682	6258	.9081403	1487	.3940365	0423	103 10 17.2	8.5	0.32	071875
5.5	.2398928	8500	.9063373	3461	.3932540	2599	103 38 52.8	44.0	0.36	071856
6.0	.2481009	0578	.9044707	4799	.3924439	4499	104 7 28.5	19.6	0.40	071833
6.5	.2562919	2485	.9025407	5503	.3916063	6125	104 35 64.3	55.3	0.42	071806
7.0	.2644654	4217	.9005473	5574	.3907413	7477	105 4 40.1	31.0	0.44	071775
7.5	.2726205	5765	.8984906	5011	.3898488	8553	105 33 16.0	6.8	0.45	071739
8.0	.2807568	7125	.8963706	3816	.3889289	9356	106 1 52.1	42.8	0.45	071699
8.5	.2888737	8291	.8941875	1990	.3879817	9885	106 30 28.2	18.8	0.45	071654
9.0	.2969706	9257	.8919414	9534	.3870073	0143	106 58 64.5	55.0	0.44	071605
9.5	.3050471	0019	.8896323	6447	.3860056	0127	107 27 40.9	31.3	0.42	071551
10.0	.3131025	0570	.8872604	2733	.3849767	9840	107 56 17.4	7.7	0.40	071491
10.5	.3211362	0904	.8848258	8392	.3839207	9282	108 24 54.1	44.3	0.37	071426
11.0	.3291476	1016	.8823287	3426	.3828375	8452	108 53 30.9	21.0	0.33	071355
11.5	.3371362	0899	.8797692	7836	.3817273	7351	109 21 67.9	57.9	0.28	071279
12.0	.3451013	0548	.8771474	1623	.3805901	5981	109 50 45.0	34.9	0.22	071197
12.5	.3530424	:9956	.8744635	4789	.3794260	4341	110 19 22.2	12.0	0.17	071109
13.0	.3609591	9121	.8717177	7336	.3782351	2434	110 47 59.6	49.3	0.11	071016
13.5	.3688506	8034	.8689101	9265	.3770173	0257	111 16 37.1	26.8	—0.05	070916
14.0	.3767161	6686	.8660410	0579	.3757728	7814	111 45 14.7	4.3	+0.01	070810
14.5	.3845549	5072	.8631105	1279	.3745017	5104	112 13 52.4	41.9	0.07	070698
15.0	.3923665	3186	.8601188	1368	.3732040	2130	112 42 30.3	19.7	0.13	070579
15.5	.4001505	1024	.8570662	0847	.3718798	8889	113 10 68.3	57.6	0.20	070454
16.0	.4079063	8580	.8539529	9719	.3705292	5385	113 39 46.4	35.6	0.27	070323
16.5	.4156333	5848	.8507790	7985	.3691523	1618	114 8 24.6	13.7	0.34	070185
17.0	.4233309	2822	.8475448	5649	.3677492	7589	114 36 63.0	52.0	0.40	070041
17.5	.4309985	9496	.8442506	2712	.3663201	3299	115 5 41.5	30.4	0.45	069890
18.0	.4386355	5864	.8408965	9177	.3648650	8750	115 34 20.1	9.0	0.50	069732
18.5	.4462413	1920	.8374828	5045	.3633840	3942	116 2 58.8	47.6	0.54	069568
19.0	.4538153	7659	.8340098	0321	.3618772	8876	116 31 37.6	26.3	0.58	069398
19.5	.4613570	3075	.8304777	5005	.3603449	3554	117 0 16.4	5.1	0.61	069222
20.0	.4688657	8160	.8268869	9103	.3587871	7978	117 28 55.4	44.0	0.63	069039
20.5	.4763408	2910	.8232376	2616	.3572039	2148	117 57 34.4	22.9	0.65	068850
21.0	.4837818	7319	.8195301	5547	.3555954	6065	118 26 13.6	2.0	0.66	068655
21.5	.4911883	1383	.8157647	7898	.3539617	9730	118 54 52.8	41.1	0.67	068454
22.0	.4985598	5097	.8119418	9675	.3523030	3145	119 23 32.2	20.4	0.67	068248
22.5	.5058958	8456	.8080616	0879	.3506194	6311	119 51 71.6	59.8	0.67	068036
23.0	.5131958	1455	.8041244	1513	.3489111	9230	120 20 51.2	39.3	0.66	067819
23.5	.5204591	4087	.8001306	1581	.3471782	1903	120 49 30.8	18.8	0.64	067597
24.0	.5276853	6348	.7960805	1086	.3454208	4331	121 17 70.5	58.5	0.61	067369
24.5	.5348739	8233	.7919743	:0030	.3436390	6515	121 46 50.3	38.2	0.57	067136
25.0	.5420243	:9737	.7878123	8416	.3418330	8457	122 15 30.2	18.0	0.53	066899
25.5	.5491362	0855	.7835950	6249	.3400030	0159	122 43 70.2	57.9	0.48	066658
26.0	.5562090	1583	.7793226	3531	.3381490	1621	123 12 50.4	38.0	0.43	066414
26.5	.5632422	1915	.7749955	:0266	.3362712	2845	123 41 30.7	18.2	0.37	066163
27.0	.5702355	1848	.7706139	6456	.3343697	3832	124 9 71.2	58.6	0.31	065909
27.5	.5771883	1376	.7661782	2105	.3324448	4585	124 38 51.8	39.1	0.25	065651
28.0	.5841003	0496	.7616887	7216	.3304965	5104	125 7 32.5	19.8	0.18	065390
28.5	.5909709	9202	.7571457	1792	.3285250	5391	125 36 13.3	0.6	0.11	065125
29.0	.5977996	7489	.7525494	5835	.3265304	5447	126 4 54.3	41.5	+0.04	064856
29.5	.6045861	5354	.7479003	9350	.3245128	5273	126 33 35.5	22.6	—0.02	064584
30.0	.6113300	2793	.7431988	2341	.3224725	4872	127 2 16.9	3.9	0.09	064308
30.5	.6180309	:9803	.7384451	4810	.3204096	4245	127 30 58.4	45.3	0.15	064030
31.0	.6246882	6376	.7336395	6760	.3183242	3394	127 59 40.1	26.9	0.21	063749
31.5	.6313015	2509	.7287822	8193	.3162165	2319	128 28 22.1	8.8	0.36	063465
Aug. 1.0	.6378704	8199	.7238736	9113	.3140865	1021	128 56 64.3	50.9	0.31	063177
1.5	.6443941	3436	.7189140	9523	.3119343	9501	129 25 46.7	33.3	0.35	062886
2.0	—.6508728	8224	+.7139087	9426	+.3097601	7762	129 54 29.4	16.0	—0.39	062593

NOTE.—The accented letters correspond to the mean equinox and equator of January 0d.0.

Date. 1871.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ⊙'s True Longitude.	λ'	β = ⊙'s Latitude.	Log. Rad. Vect. = ρ.
							° ′ ″	″	″	0 0
Aug. 2.5	−.6573056	2553	+.7088432	8827	+.3075641	5804	130 22 72.4	58.9	−0.42	062297
3.0	.6636921	6419	.7037325	7726	.3053464	3629	130 51 55.6	42.1	0.44	061997
3.5	.6700320	:9819	.6985720	6127	.3031072	1239	131 20 39.1	25.5	0.46	061694
4.0	.6763248	2748	.6933620	4034	.3008466	8636	131 49 22.9	9.2	0.47	061388
4.5	.6825699	5200	.6881029	1449	.2985648	5820	132 17 66.9	53.1	0.47	061078
5.0	.6887669	7171	.6827949	8375	.2962618	2792	132 46 51.2	37.3	0.47	060765
5.5	.6949155	8658	.6774384	4816	.2939378	9554	133 15 35.9	21.9	0.45	060448
6.0	.7010152	:9657	.6720337	0775	.2915929	6108	133 44 20.9	6.9	0.43	060128
6.5	.7070654	0160	.6665811	6255	.2892273	2454	134 12 66.2	52.2	0.40	059804
7.0	.7130657	0165	.6610811	1261	.2868412	8595	134 41 51.9	37.8	0.36	059476
7.5	.7190158	:9668	.6555340	5796	.2844347	4532	135 10 37.9	23.7	0.32	059145
8.0	.7249152	8664	.6499401	9864	.2820079	0267	135 39 24.2	10.0	0.27	058810
8.5	.7307633	7147	.6442998	3467	.2795609	5799	136 7 70.9	56.6	0.21	058470
9.0	.7365598	5114	.6386135	6610	.2770939	1131	136 36 58.0	43.6	0.15	058126
9.5	.7423042	2560	.6328815	9296	.2746072	6266	137 5 45.4	30.9	0.09	057777
10.0	.7479960	9480	.6271041	1528	.2721008	1205	137 34 33.2	18.6	−0.03	057423
10.5	.7536347	5869	.6212818	3311	.2695749	5948	138 3 21.3	6.7	+0.03	057064
11.0	.7592199	1724	.6154150	4649	.2670296	0497	138 31 69.8	55.1	0.10	056700
11.5	.7647511	7038	.6095039	5544	.2644651	4854	139 0 58.6	43.9	0.16	056331
12.0	.7702278	1808	.6035490	6001	.2618816	9022	139 29 47.8	33.0	0.23	055957
12.5	.7756496	6028	.5975509	6026	.2592794	3002	139 58 37.4	22.5	0.29	055578
13.0	.7810161	:9696	.5915099	5622	.2566585	6795	140 27 27.3	12.4	0.36	055193
13.5	.7863268	2806	.5854263	4792	.2540191	0404	140 56 17.5	2.5	0.42	054803
14.0	.7915814	5355	.5793007	3542	.2513614	3829	141 24 68.1	53.0	0.48	054408
14.5	.7967793	7337	.5731335	1876	.2486857	7074	141 53 59.0	43.8	0.53	054007
15.0	.8019201	8748	.5669252	9799	.2459921	:0140	142 22 50.3	35.0	0.57	053601
15.5	.8070033	:9583	.5606761	7314	.2432809	3030	142 51 41.9	26.6	0.60	053189
16.0	.8120286	:9839	.5543868	4426	.2405522	5746	143 20 33.8	18.5	0.63	052772
16.5	.8169956	9512	.5480578	1142	.2378062	8288	143 49 26.0	10.7	0.65	052350
17.0	.8219040	8599	.5416897	7467	.2350432	0660	144 18 18.6	3.2	0.67	051922
17.5	.8267534	7096	.5352828	3404	.2322636	2865	144 46 71.5	56.0	0.68	051489
18.0	.8315434	5000	.5288376	8957	.2294670	4903	145 15 64.7	49.2	0.68	051051
18.5	.8362736	2305	.5223547	4134	.2266541	6776	145 44 58.2	42.6	0.67	050608
19.0	.8409436	9009	.5158346	8938	.2238250	8488	146 13 52.0	36.3	0.66	050161
19.5	.8455531	5108	.5092778	3376	.2209799	:0039	146 42 46.0	30.3	0.64	049710
20.0	.8501018	0599	.5026847	7450	.2181191	1434	147 11 40.4	24.6	0.61	049254
20.5	.8545893	5478	.4960558	1167	.2152428	2674	147 40 35.1	19.2	0.57	048793
21.0	.8590154	:9743	.4893917	4531	.2123511	3759	148 9 30.1	14.2	0.53	048328
21.5	.8633797	3390	.4826929	7549	.2094442	4692	148 38 25.4	9.4	0.48	047858
22.0	.8676820	6418	.4759598	:0223	.2065223	5475	149 7 21.0	4.9	0.43	047384
22.5	.8719219	8821	.4691929	2560	.2035858	6113	149 36 16.9	0.8	0.38	046907
23.0	.8760991	0597	.4623927	4563	.2006348	6605	150 4 73.1	57.0	0.32	046426
23.5	.8802133	1743	.4555596	6237	.1976695	6954	150 33 69.6	53.4	0.26	045942
24.0	.8842641	2256	.4486942	7588	.1946902	7163	151 2 66.4	50.1	0.20	045454
24.5	.8882515	2134	.4417969	8620	.1916972	7236	151 31 63.5	47.1	0.14	044963
25.0	.8921752	1376	.4348683	9339	.1886906	7172	152 0 60.9	44.4	0.07	044469
25.5	.8960348	:9977	.4279089	9750	.1856706	6974	152 29 58.6	42.1	+0.01	043973
26.0	.8998300	7934	.4209192	9858	.1826373	6643	152 58 56.7	40.2	−0.06	043475
26.5	.9035608	5247	.4138995	9666	.1795911	6184	153 27 55.1	38.6	0.12	042974
27.0	.9072269	1913	.4068504	9180	.1765322	5597	153 56 53.9	37.3	0.18	042471
27.5	.9108281	7930	.3907724	8405	.1734608	4885	154 25 53.0	36.4	0.24	041966
28.0	.9143641	3295	.3926659	7344	.1703771	4050	154 54 52.5	35.8	0.29	041460
28.5	.9178346	8006	.3855314	6004	.1672813	3095	155 23 52.4	35.6	0.34	040952
29.0	.9212393	2057	.3783695	4389	.1641736	2020	155 52 52.7	35.8	0.38	040442
29.5	.9245782	5451	.3711807	2506	.1610542	0828	156 21 53.3	36.3	0.41	039931
30.0	.9278510	8185	.3639653	:0356	.1579234	9522	156 50 54.3	37.3	0.44	039418
30.5	.9310573	0253	.3567238	7946	.1547813	8105	157 19 55.8	38.7	0.46	038904
31.0	.9341969	1655	.3494567	5279	.1516281	6573	157 48 57.6	40.5	0.47	038388
31.5	.9372696	2387	.3421646	2363	.1484640	4934	158 17 59.9	42.7	0.47	037871
Sept. 1.0	.9402752	2449	.3348480	9201	.1452893	3189	158 46 62.6	45.4	0.46	037352
1.5	−.9432134	1836	+.3275072	5798	+.1421042	1341	159 15 65.8	48.5	−0.44	036832

NOTE.—The accented letters correspond to the mean equinox and equator of Jan. 0d.0.

SUN'S COÖRDINATES, 1871.

Date. 1871.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Sept. 2.0	−.9460839	0547	+.3201427	2157	+.1389089	9390	159° 44′ 69″.4	52″.1	−0″.42	0.0 036310
2.5	.9488866	8580	.3127550	8284	.1357035	7338	160 13 73.5	56.1	0.39	035787
3.0	.9516212	5932	.3053447	4185	.1324883	5188	160 43 18.0	0.6	0.36	035262
3.5	.9542873	2599	.2979121	9864	.1292635	2942	161 12 23.1	5.6	0.32	034735
4.0	.9568848	8580	.2904578	5325	.1260293	0602	161 41 28.7	11.1	0.28	034207
4.5	.9594135	3873	.2829822	:0573	.1227859	8170	162 10 34.7	17.1	0.23	033677
5.0	.9618732	8476	.2754858	5613	.1195335	5648	162 39 41.1	23.5	0.18	033145
5.5	.9642635	2385	.2679692	:0451	.1162723	3038	163 8 48.1	30.4	0.12	032611
6.0	.9665841	5598	.2604328	5091	.1130026	0343	163 37 55.6	37.9	−0.05	032074
6.5	.9688350	8113	.2528772	9539	.1097245	7562	164 6 63.7	45.9	+0.01	031534
7.0	.9710160	:9930	.2453030	3801	.1064384	4705	164 35 72.3	54.5	0.08	030992
7.5	.9731266	1042	.2377108	7883	.1031444	1767	165 5 21.4	3.5	0.15	030448
8.0	.9751667	1450	.2301008	1787	.0998428	8753	165 34 31.0	13.1	0.22	029901
8.5	.9771362	1151	.2224738	5521	.0965338	5665	166 3 41.2	23.2	0.29	029351
9.0	.9790349	0145	.2148303	9089	.0932176	2505	166 32 51.9	33.9	0.35	028799
9.5	.9808623	8425	.2071709	2499	.0898945	9276	167 1 63.2	45.1	0.41	028244
10.0	.9826184	5993	.1994962	5755	.0865647	5980	167 30 74.9	56.8	0.47	027685
10.5	.9843029	2845	.1918066	8863	.0832285	2620	168 0 27.1	8.9	0.52	027123
11.0	.9859157	8980	.1841027	1827	.0798860	9197	168 29 39.7	21.5	0.57	026558
11.5	.9874567	4397	.1763852	4656	.0765376	5715	168 58 52.9	34.6	0.61	025990
12.0	.9889256	9093	.1686547	7354	.0731835	2176	169 27 66.6	48.3	0.65	025418
12.5	.9903222	3066	.1609120	9930	.0698240	8583	169 57 20.8	2.4	0.68	024843
13.0	.9916464	6315	.1531574	2387	.0664593	4937	170 26 35.5	17.1	0.70	024264
13.5	.9928980	8838	.1453915	4731	.0630897	1243	170 55 50.7	32.2	0.71	023682
14.0	.9940770	0635	.1376149	6968	.0597155	7503	171 24 66.4	47.9	0.71	023096
14.5	.9951833	1705	1298282	9104	.0563368	3718	171 54 22.6	4.0	0.71	022507
15.0	.9962166	2046	.1220320	1145	.0529539	9890	172 23 39.2	20.6	0.70	021915
15.5	.9971768	1655	.1142270	3098	.0495672	6025	172 52 56.2	37.6	0.68	021320
16.0	.9980640	0535	.1064138	4969	.0461770	2125	173 21 73.7	55.0	0.66	020722
16.5	.9988780	8682	.0985931	6765	.0427834	8191	173 51 31.7	12.9	0.63	020120
17.0	.9996187	6097	.0907654	8490	.0393867	4225	174 20 50.1	31.3	0.59	019515
17.5	1.0002862	2779	.0829311	:0150	.0359871	:0231	174 49 69.0	50.1	0.54	018907
18.0	1.0008803	8728	.0750910	1751	.0325850	6212	175 19 28.3	9.3	0.49	018297
18.5	1.0014010	3942	.0672457	3301	.0291806	2170	175 48 48.0	29.0	0.44	017685
19.0	1.0018482	8423	.0593959	4805	.0257742	8107	176 17 68.1	49.1	0.38	017070
19.5	1.0022219	2167	.0515420	6268	.0223661	4028	176 47 28.7	9.6	0.32	016453
20.0	1.0025223	5179	.0436847	7697	.0189565	9933	177 16 49.7	30.6	0.26	015834
20.5	1.0027492	7456	.0358246	9098	.0155456	5826	177 45 71.1	51.9	0.20	015213
21.0	1.0029026	8998	.0279622	0476	.0121337	1708	178 15 32.9	13.7	0.14	014591
21.5	1.0029825	9805	.0200982	1838	.0087211	7584	178 44 55.2	35.9	0.08	013968
22.0	1.0029889	9877	.0122331	3189	.0053081	3455	179 13 77.8	58.5	+0.01	013344
22.5	1.0029218	9214	+.0043675	4535	+.0018949	9324	179 43 40.9	21.5	−0.06	012719
23.0	1.0027813	7817	−.0034981	4120	−.0015184	4808	180 12 64.4	45.0	0.12	012093
23.5	1.0025673	5685	.0113631	2768	.0049313	8936	180 42 28.4	8.9	0.18	011466
24.0	1.0022799	2819	.0192270	1406	.0083437	3058	181 11 52.8	33.2	0.22	010839
24.5	1.0019192	9220	.0270891	0025	.0117554	7174	181 40 77.6	58.0	0.27	010212
25.0	1.0014852	4888	.0349490	8623	.0151661	1280	182 10 42.8	23.3	0.31	009585
25.5	1.0009779	9823	.0428061	7192	.0185755	5372	182 39 68.6	49.0	0.34	008958
26.0	1.0003973	4025	.0506599	5729	.0219835	9451	183 9 34.8	15.2	0.37	008332
26.5	.9997435	7495	.0585098	4226	.0253897	3512	183 28 61.4	41.8	0.39	007706
27.0	.9990166	0235	.0663553	2680	.0287940	7554	184 8 28.5	8.8	0.40	007081
27.5	.9982165	2242	.0741958	1084	.0321961	1574	184 37 56.2	36.4	0.40	006457
28.0	.9973433	3519	.0820308	:9433	.0355958	5570	185 7 24.3	4.5	0.40	005833
28.5	.9963970	4064	.0898598	7722	.0389928	9538	185 36 52.9	33.0	0.39	005210
29.0	.9953777	3880	.0976823	5946	.0423868	3478	186 6 21.9	2.0	0.38	004588
29.5	.9942853	2964	.1054977	4099	.0457778	7387	186 35 51.5	31.5	0.35	003967
30.0	.9931199	1319	.1133054	2175	.0491654	1262	187 5 21.6	1.6	0.32	003347
30.5	.9918816	8944	.1211049	0169	.0525494	5101	187 34 52.3	32.2	0.28	002728
Oct. 1.0	.9905705	5842	.1288956	8075	.0559296	8902	188 4 23.5	3.4	0.23	002110
1.5	.9891865	2010	.1366770	5888	.0593057	2662	188 33 55.3	35.1	0.18	001493
2.0	−.9877297	7451	−.1444485	3603	−.0626775	6379	189 3 27.6	7.4	−0.12	000877

NOTE. The accented letters correspond to the mean equinox and equator of January 0d.0.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1871.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Oct. 2.5	−.9862001	2163	−.1522095	1212	−.0660448	0051	189° 32′ 60″.5	40″.2	−0″.06	0.0 000262
3.0	.9845978	6150	.1599596	8713	.0694073	3675	190 2 33.9	13.6	0.00	●999647
3.5	.9829228	9408	.1676982	6098	.0627648	7249	190 31 67.9	47.5	+0.06	999033
4.0	.9811752	1941	.1754248	3364	.0761171	0771	191 1 42.4	22.0	0.13	998420
4.5	.9793550	3748	.1831388	0504	.0794639	4239	191 30 77.5	57.0	0.19	997807
5.0	.9774622	4829	.1908397	7513	.0828049	7648	192 0 53.2	32.7	0.26	997195
5.5	.9754970	5185	.1985267	4383	.0861400	0998	192 30 29.5	8.9	0.33	996583
6.0	.9734595	4819	.2061994	1110	.0894689	4286	192 59 66.4	45.8	0.40	995971
6.5	.9713497	3730	.2138572	7688	.0927913	7510	193 29 43.9	23.2	0.46	995359
7.0	.9691676	1918	.2214995	4111	.0961070	0666	193 59 22.0	1.3	0.52	994748
7.5	.9669132	9383	.2291256	0372	.0994157	3752	194 28 60.7	39.9	0.57	994136
8.0	.9645868	6128	.2367350	6466	.1027172	6767	194 58 39.9	19.1	0.61	993524
8.5	.9621885	2154	.2443270	2386	.1060112	:9706	195 27 79.7	58.8	0.65	992911
9.0	.9597184	7462	.2519011	8128	.1092975	2569	195 57 60.1	39.1	0.69	992298
9.5	.9571766	2053	.2594566	3683	.1125757	5350	196 27 41.0	20.0	0.72	991685
10.0	.9545632	5928	.2669930	9048	.1158457	8050	196 57 22.5	1.5	0.75	991071
10.5	.9518784	9089	.2745097	4215	.1191072	0665	197 16 64.5	43.5	0.77	990456
11.0	.9491223	1538	.2820061	:9180	.1223599	3192	197 56 47.1	26.0	0.78	989841
11.5	.9462950	3274	.2894815	3934	.1256034	5626	198 26 30.2	9.0	0.78	989225
12.0	.9433968	4301	.2969353	8473	.1288377	7969	198 55 73.9	52.6	0.77	988608
12.5	.9404280	4622	.3043670	2791	.1320625	0217	199 25 58.1	36.8	0.75	987990
13.0	.9373886	4237	.3117759	6881	.1352774	2366	199 55 42.9	21.6	0.73	987372
13.5	.9342787	3147	.3191615	0738	.1384821	4413	200 25 28.2	6.9	0.70	986753
14.0	.9310986	1355	.3265231	4355	.1416765	6357	200 54 74.0	52.6	0.66	986133
14.5	.9278486	8864	.3338602	7727	.1448603	8195	201 24 60.3	38.8	0.62	985512
15.0	.9245289	5677	.3411721	0847	.1480332	:9924	201 54 47.1	25.6	0.58	984891
15.5	.9211398	1795	.3484583	3710	.1511950	1542	202 24 34.4	12.9	0.53	984269
16.0	.9176815	7221	.3557181	6309	.1543453	3045	202 54 22.2	0.6	0.47	983646
16.5	.9141543	1958	.3629510	8639	.1574840	4432	203 23 70.5	48.8	0.41	983023
17.0	.9105585	6010	.3701564	0695	.1606108	5700	203 53 59.2	37.4	0.35	982400
17.5	.9068942	9376	.3773336	2468	.1637253	6845	204 23 48.3	26.5	0.29	981778
18.0	.9031619	2063	.3844822	3956	.1668275	7871	204 53 37.9	16.0	0.22	981156
18.5	.8993620	4073	.3916017	5152	.1699170	8763	205 23 27.9	5.9	0.16	980534
19.0	.8954947	5410	.3986914	6051	.1729936	9529	205 52 78.3	56.3	0.09	979913
19.5	.8915602	6074	.4057507	6645	.1760570	0163	206 22 69.2	47.1	+0.03	979293
20.0	.8875589	6071	.4127792	6932	.1791070	0663	206 52 60.5	38.4	−0.04	978674
20.5	.8834912	5403	.4197764	6906	.1821434	1027	207 22 52.2	30.1	0.10	978056
21.0	.8793572	4073	.4267417	6561	.1851659	1253	207 52 44.4	22.2	0.15	977439
21.5	.8751574	2084	.4336747	5893	.1881743	1337	208 22 37.0	14.7	0.20	976823
22.0	.8708921	9441	.4405748	4896	.1911684	1279	208 52 30.0	7.7	0.24	976210
22.5	.8665615	6144	.4474415	3565	.1941480	1075	209 22 23.4	1.0	0.28	975599
23.0	.8621660	2199	.4542743	1896	.1971129	0725	209 51 77.2	54.7	0.31	974990
23.5	.8577060	7608	.4610728	:9883	.2000629	0225	210 21 71.3	48.8	0.33	974383
24.0	.8531818	2376	.4678365	7522	.2029977	9574	210 51 65.9	43.4	0.35	973779
24.5	.8485936	6503	.4745648	4807	.2059171	8769	211 21 61.1	38.5	0.35	973177
25.0	.8439418	9995	.4812572	1734	.2088210	7809	211 51 56.8	34.1	0.35	972579
25.5	.8392269	2855	.4879134	8298	.2117091	6690	212 21 52.9	30.2	0.34	971983
26.0	.8344490	5086	.4945328	4495	.2145812	5412	212 51 49.4	26.7	0.32	971391
26.5	.8296085	6690	.5011150	0320	.2174371	3072	213 21 46.3	23.5	0.30	970802
27.0	.8247057	7672	.5076594	5767	.2202766	2368	213 51 43.7	20.8	0.27	970217
27.5	.8197411	8035	.5141655	0831	.2230995	0598	214 21 41.6	18.6	0.23	969635
28.0	.8147149	7783	.5206329	5508	.2259056	8660	214 51 40.0	17.0	0.19	969057
28.5	.8096274	6917	.5270611	:9793	.2286946	6551	215 21 38.8	15.8	0.15	968483
29.0	.8044791	5444	.5334497	3682	.2314664	4270	215 51 38.0	14.9	0.10	967912
29.5	.7992702	3364	.5397982	7170	.2342208	1815	216 21 37.7	14.5	−0.04	967344
30.0	.7940011	0683	.5461061	0253	.2369576	9184	216 51 37.9	14.7	+0.02	966780
30.5	.7886721	7403	.5523730	2925	.2396766	6375	217 21 38.7	15.4	0.08	966221
31.0	.7832835	3527	.5585985	5184	.2423775	3386	217 51 40.0	16.6	0.15	965665
31.5	.7778357	9059	.5647820	7022	.2450602	0214	218 21 41.7	18.3	0.22	965112
Nov. 1.0	.7723290	4001	.5709231	8437	.2477245	6858	218 51 44.0	20.5	0.29	964563
1.5	−.7667639	8360	−.5770214	:9423	−.2503702	3319	219 21 46.8	23.2	+0.36	964017

● The first figures of this and the following logarithms are 9.9.

Date. 1871.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
										9.9
Nov. 2.0	—.7611406	2136	—.5830763	:9976	—.2529971	9587	219° 51′ 50″.1	26″.5	+0″.43	963475
2.5	.7554593	5332	.5890874	0091	.2556050	5667	220 21 54.0	30.3	0.49	962937
3.0	.7497206	7955	.5950542	:9763	.2581936	1555	220 51 58.4	34.7	0.55	962402
3.5	.7439249	:0007	.6009762	8987	.2607628	7248	221 21 63.3	39.6	0.60	961871
4.0	.7380725	1493	.6068529	7758	.2633124	2746	221 51 68.8	45.0	0.65	961343
4.5	.7321637	2414	.6126837	6070	.2658421	8044	222 21 74.7	50.9	0.69	960818
5.0	.7261990	2777	.6184681	3918	.2683518	3143	222 51 81.2	57.2	0.73	960295
5.5	.7201788	2583	.6242057	1298	.2708412	8038	223 22 28.1	4.0	0.76	959775
6.0	.7141036	1842	.6298961	8207	.2733101	2730	223 52 35.6	11.4	0.79	959257
6.5	.7079736	:0552	.6355387	4637	.2757583	7213	224 22 43.6	19.3	0.80	958742
7.0	.7017893	8719	.6411329	0584	.2781856	1488	224 52 52.1	27.8	0.81	958229
7.5	.6955513	6349	.6466784	6043	.2805918	5552	225 22 61.1	36.7	0.81	957718
8.0	.6892599	3444	.6521747	1011	.2829767	9403	225 52 70.6	46.2	0.81	957209
8.5	.6829154	:0009	.6576214	5483	.2853400	3037	226 22 80.6	56.1	0.79	956702
9.0	.6765185	6049	.6630180	:9454	.2876817	6457	226 53 31.1	6.6	0.77	956198
9.5	.6700696	1570	.6683639	2918	.2900015	:9657	227 23 42.1	17.5	0.74	955696
10.0	.6635692	6575	.6736587	5871	.2922992	2636	227 53 53.5	28.8	0.70	955195
10.5	.6570177	1070	.6789020	8309	.2945745	5391	228 23 65.4	40.6	0.66	954696
11.0	.6504157	5059	.6840931	0225	.2968272	7920	228 53 77.7	52.8	0.61	954199
11.5	.6437637	8549	.6892317	1616	.2990571	0221	229 34 30.4	5.5	0.56	953705
12.0	.6370622	1543	.6943173	2478	.3012640	2293	229 54 43.6	18.6	0.51	953213
12.5	.6303116	4047	.6993496	2806	.3034478	4133	230 24 57.2	32.1	0.45	952723
13.0	.6235126	6066	.7043281	2597	.3056083	5740	230 54 71.1	46.0	0.39	952234
13.5	.6166659	7608	.7092524	1846	.3077453	7112	231 25 25.4	0.2	0.33	951746
14.0	.6097719	8677	.7141221	0549	.3098586	8248	231 55 40.1	14.8	0.27	951261
14.5	.6028310	9277	.7189369	8703	.3119480	9144	232 25 55.2	29.8	0.21	950778
15.0	.5958440	9417	.7236963	6303	.3140134	:9801	232 55 70.7	45.2	0.14	950297
15.5	.5888114	9100	.7283999	3343	.3160546	0215	233 26 26.5	0.9	0.07	949819
16.0	.5817338	8333	.7330473	:9825	.3180714	0386	233 56 42.7	17.0	+0.02	949344
16.5	.5746116	7121	.7376382	5740	.3200636	0310	234 26 59.2	33.4	—0.04	948871
17.0	.5674456	5470	.7421722	1087	.3220312	:9989	234 56 76.0	50.1	0.09	948401
17.5	.5602363	3386	.7466489	5860	.3239740	9420	235 27 33.1	7.2	0.14	947935
18.0	.5529843	:0875	.7510680	0058	.3258918	8601	235 57 50.5	24.6	0.19	947472
18.5	.5456901	7943	.7554294	3678	.3277843	7529	236 27 68.2	42.2	0.23	947013
19.0	.5383544	4595	.7597326	6717	.3296516	6205	236 58 26.3	0.2	0.26	946558
19.5	.5309777	:0837	.7639773	9171	.3314935	4627	237 28 44.7	18.5	0.29	946106
20.0	.5235605	6674	.7681631	1036	.3333099	2794	237 58 63.3	37.0	0.31	945659
20.5	.5161035	2113	.7722898	2310	.3351005	0703	238 28 82.2	55.8	0.32	945216
21.0	.5086073	7160	.7763570	2989	.3368653	8354	238 59 41.3	14.8	0.33	944777
21.5	.5010723	1819	.7803644	3070	.3386041	5745	239 29 60.7	34.2	0.32	944343
22.0	.4934992	6097	.7843118	2551	.3403167	2874	239 59 80.5	53.9	0.31	943913
22.5	.4858886	:0000	.7881989	1429	.3420032	:9742	240 30 40.6	13.9	0.29	943488
23.0	.4782410	3533	.7920255	:9703	.3436634	6347	241 0 60.9	34.2	0.26	943069
23.5	.4705569	6701	.7957913	7368	.3452972	2688	241 30 81.5	54.7	0.22	942655
24.0	.4628369	9509	.7994960	4423	.3469044	8764	242 1 42.4	15.5	0.18	942247
24.5	.4550817	1966	.8031393	0863	.3484849	4572	242 31 63.7	36.7	0.13	941844
25.0	.4472918	4075	.8067210	6688	.3500387	0114	243 1 85.2	58.1	0.08	941447
25.5	.4394678	5844	.8102408	1894	.3515657	5387	243 32 47.0	19.8	—0.03	941055
26.0	.4316102	7276	.8136984	6478	.3530657	0391	244 2 69.1	41.8	+0.03	940670
26.5	.4237195	8378	.8170936	0438	.3545386	5123	244 33 31.5	4.2	0.09	940291
27.0	.4157964	9155	.8204262	3772	.3559843	9584	245 3 54.2	26.9	0.15	939918
27.5	.4078414	9614	.8236959	6477	.3574027	3771	245 33 77.3	49.9	0.21	939551
28.0	.3998551	9759	.8269024	8550	.3587937	7685	246 4 40.7	13.2	0.28	939190
28.5	.3918380	9596	.8300455	:9989	.3601571	1322	246 34 64.4	36.8	0.35	938836
29.0	.3837907	9131	.8331249	0792	.3614929	4684	247 5 28.4	0.7	0.42	938488
29.5	.3757137	8369	.8361404	0955	.3628010	7769	247 35 52.7	24.9	0.48	938145
30.0	.3676075	7315	.8390917	0477	.3640813	0576	248 5 77.4	49.5	0.54	937808
30.5	.3594729	5977	.8419785	9353	.3653335	3101	248 36 42.4	14.4	0.60	937477
Dec. 1.0	.3513104	4360	.8448006	7583	.3665577	5347	249 6 67.7	39.6	0.65	937152
1.5	.3431204	2468	.8475578	5164	.3677538	7312	249 37 33.4	5.2	0.70	936832
2.0	—.3349035	:0307	—.8502498	2093	—.3689217	8995	250 7 59.4	31.2	+0.74	936518

NOTE. The accented letters correspond to the mean equinox and equator of January 0d.0

Date. 1871.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ. 9.9
Dec. 2.5	—.3266604	7884	—.8528762	8366	—.3700612	0394	250° 37′ 85″.8	57″.5	+0″.77	936209
3.0	.3183918	5206	.8554369	3982	.3711722	1508	251 8 52.6	24.2	0.80	935905
3.5	.3100982	2278	.8579318	8940	.3722545	2335	251 38 79.7	51.2	0.82	935607
4.0	.3017802	9105	.8603606	3238	.3733081	2875	252 9 47.1	18.5	0.84	935314
4.5	.2934385	5696	.8627228	6869	.3743330	3128	252 39 74.8	46.1	0.85	935025
5.0	.2850737	2055	.8650182	:9833	.3753290	3092	253 10 42.9	14.1	0.85	934742
5.5	.2766864	8190	.8672467	2128	.3762960	2766	253 40 71.3	42.4	0.84	934464
6.0	.2682773	4106	.8694081	3752	.3772339	2149	254 11 40.0	11.0	0.83	934190
6.5	.2598469	9810	.8715021	4702	.3781426	1240	254 41 69.0	39.9	0.81	933921
7.0	.2513961	5309	.8735285	4976	.3790220	0038	255 12 38.3	9.2	0.78	933656
7.5	.2429255	:0610	.8754871	4572	.3798720	8542	255 42 67.9	38.7	0.74	933395
8.0	.2344358	5720	.8773776	3487	.3806925	6752	256 13 37.8	8.5	0.70	933138
8.5	.2259274	:0643	.8791998	1719	.3814835	4666	256 43 68.0	38.6	0.65	932885
9.0	.2174012	5388	.8809537	9269	.3822448	2283	257 14 38.4	8.9	0.59	932636
9.5	.2088579	9962	.8826390	6132	.3829763	9602	257 44 69.1	39.5	0.53	932390
10.0	.2002981	4371	.8842556	2309	.3836780	6624	258 15 40.0	10.3	0.47	932148
10.5	.1917225	8622	.8858033	7796	.3843499	3347	258 45 71.1	41.3	0.41	931910
11.0	.1831320	2723	.8872820	2594	.3849918	9771	259 16 42.4	12.5	0.34	931675
11.5	.1745272	6682	.8886914	6699	.3856036	5893	259 46 74.0	44.0	0.28	931444
12.0	.1659087	:0503	.8900315	0111	.3861854	1716	260 17 45.8	15.7	0.21	931217
12.5	.1572774	4196	.8913023	2830	.3867371	7237	260 47 77.7	47.6	0.15	930993
13.0	.1486339	7767	.8925036	4854	.3872586	2457	261 18 49.8	19.6	0.09	930774
13.5	.1399789	:1223	.8936351	6180	.3877500	7376	261 48 82.1	51.8	+0.03	930559
14.0	.1313131	4571	.8946969	6810	.3882111	1992	262 19 54.5	24.1	—0.03	930348
14.5	.1226373	7819	.8956889	6741	.3886419	6304	262 49 87.0	56.5	0.08	930141
15.0	.1139522	:0974	.8966111	5975	.3890424	0314	263 20 59.6	29.0	0.13	929938
15.5	.1052585	4043	.8974634	4509	.3894125	4020	263 51 32.4	1.7	0.17	929739
16.0	.0965569	7032	.8982457	2344	.3897521	7421	264 21 65.3	34.5	0.21	929545
16.5	.0878482	9951	.8989580	9478	.3900613	0518	264 52 38.3	7.4	0.24	929355
17.0	.0791330	2804	.8996003	5913	.3903401	3311	265 22 71.3	40.4	0.27	929170
17.5	.0704120	5600	.9001725	1646	.3905885	5800	265 53 44.4	13.4	0.28	928990
18.0	.0616860	8345	.9006746	6680	.3908064	7984	266 23 77.6	46.5	0.29	928815
18.5	.0529556	:1046	.9011068	1014	.3909939	9864	266 54 50.8	19.6	0.28	928645
19.0	.0442215	3710	.9014689	4647	.3911510	1440	267 24 84.1	52.8	0.28	928481
19.5	.0354844	6344	.9017609	7579	.3912776	2711	267 55 57.4	26.0	0.26	928322
20.0	.0267448	8953	.9019828	9810	.3913738	3678	268 25 90.8	59.3	0.24	928169
20.5	.0180035	1545	.9021348	1342	.3914396	4341	268 56 64.2	32.6	0.21	928022
21.0	.0092611	4125	.9022168	2174	.3914750	4700	269 27 37.7	6.0	0.17	927881
21.5	—.0005184	6703	.9022288	2306	.3914800	4755	269 57 71.3	39.4	0.13	927746
22.0	+.0082239	0716	.9021707	1738	.3914546	4507	270 28 44.8	12.9	0.09	927618
22.5	.0169652	8124	.9020427	0470	.3913988	3954	270 58 78.4	46.4	—0.04	927496
23.0	.0257049	5517	.9018448	8504	.3913127	3098	271 29 52.0	19.9	+0.02	927381
23.5	.0344424	2888	.9015771	5839	.3911962	1938	271 59 85.7	53.5	0.08	927272
24.0	.0431769	0229	.9012397	2478	.3910494	0476	272 30 59.4	27.1	0.14	927170
24.5	.0519079	7535	.9008325	8418	.3908724	8711	273 1 33.2	0.8	0.20	927075
25.0	.0606347	4800	.9003555	3661	.3906651	6644	273 31 67.0	34.5	0.27	926987
25.5	.0693566	2015	.8998088	8207	.3904275	4273	274 2 40.8	8.2	0.33	926906
26.0	.0780732	:9178	.8991924	2056	.3901598	1602	274 32 74.6	41.9	0.40	926833
26.5	.0867837	6280	.8985065	5210	.3898619	8628	275 3 48.5	15.7	0.46	926767
27.0	.0954875	3315	.8977510	7668	.3895338	5353	275 33 82.5	49.7	0.53	926708
27.5	.1041840	0277	.8969260	9431	.3891755	1775	276 4 56.6	23.7	0.59	926656
28.0	.1128725	7160	.8960315	0500	.3887871	7897	276 34 90.7	57.7	0.65	926611
28.5	.1215525	3957	.8950676	0874	.3883687	3718	277 5 64.9	31.8	0.70	926573
29.0	.1302233	0663	.8940343	0555	.3879202	9239	277 36 39.2	6.0	0.75	926543
29.5	.1388843	7270	.8929318	9543	.3874417	4460	278 6 73.5	40.2	0.78	926519
30.0	.1475348	3773	.8917600	7839	.3869331	9380	278 37 48.0	14.6	0.81	926503
30.5	.1561741	0164	.8905190	5442	.3863945	3999	279 7 82.5	49.0	0.83	926493
31.0	.1648016	6437	.8892088	2354	.3858260	8320	279 38 57.1	23.5	0.84	926489
31.5	.1734167	2586	.8878295	8575	.3852275	2341	280 8 91.7	58.0	0.85	926492
32.0	+.1820188	:8605	—.8863813	4107	—.3845992	6064	280 39 66.4	32.7	+0.85	926501

NOTE.—The accented letters correspond to the mean equinox and equator of January 0d.0.

MERCURY.

1871.		Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
		240 4425	+0.3525	–0.0097	–0.0324	9.5497	358° 16′.3	–7.70	+ 0.22	+0.71
Jan.	2	4430	0.2996	+0.1345	–0.0154	9.5166	24 6.0	8.22	– 3.70	+0.42
	7	4435	0.1862	0.2500	+0.0045	9.4932	53 37.1	6.04	8.05	–0.14
	12	4440	+0.0288	0.3059	0.0233	9.4889	85 9.4	–0.95	10.16	0.78
	17	4445	–0.1359	0.2869	0.0365	9.5088	115 45.5	+4.01	8.49	1.08
	22	4450	0.2718	0.2048	0.0417	9.5363	143 6.0	6.50	4.89	0.99
	27	4455	0.3595	+0.0864	0.0394	9.5708	166 34.3	6.79	– 1.61	0.75
Feb.	1	4460	0.3963	–0.0475	0.0315	9.6026	186 40.9	6.01	+ 0.71	0.48
	6	4465	0.3876	0.1750	0.0199	9.6289	204 15.2	4.89	2.21	0.25
	11	4470	0.3418	0.2862	+0.0064	9.6487	220 3.1	3.76	3.15	–0.07
	16	4475	0.2672	0.3736	–0.0076	9.6618	234 41.7	2.69	3.76	+0.07
	21	4480	0.1723	0.4326	0.0211	9.6683	248 41.6	1.66	4.16	0.20
	26	4485	–0.0646	0.4600	0.0331	9.6682	262 29.2	+0.63	4.43	0.32
March	3	4490	+0.0476	0.4539	0.0426	9.6616	276 29.6	–0.48	4.58	0.43
	8	4495	0.1563	0.4139	0.0489	9.6484	291 9.2	1.72	4.55	0.54
	13	4500	0.2515	0.3377	0.0511	9.6285	306 58.6	3.19	4.28	0.64
	18	4505	0.3224	0.2300	0.0483	9.6021	324 35.1	4.90	3.50	0.73
	23	4510	0.3560	–0.0963	0.0400	9.5702	344 45.0	6.74	+ 1.84	0.76
	28	4515	0.3385	+0.0502	0.0261	9.5357	8 17.2	8.15	– 1.21	0.62
April	2	4520	0.2598	0.1874	–0.0074	9.5053	35 41.9	7.73	5.54	+0.23
	7	4525	+0.1303	0.2813	+0.0119	9.4888	66 20.5	–3.88	9.22	–0.40
	12	4530	–0.0394	0.3070	0.0295	9.4935	97 51.9	+1.27	9.89	0.95
	17	4535	0.1961	0.2598	0.0396	9.5171	127 19.7	5.36	7.11	1.08
	22	4540	0.3135	0.1591	0.0415	9.5503	153 5.2	6.82	3.47	0.90
	27	4545	0.3803	+0.0318	0.0368	9.5843	175 6.0	6.54	– 0.56	0.63
May	2	4550	0.3979	–0.1006	0.0272	9.6141	194 4.7	5.58	+ 1.40	0.37
	7	4555	0.3730	0.2226	0.0145	9.6378	210 50.8	4.44	2.65	–0.18
	12	4560	0.3144	0.3250	+0.0007	9.6548	226 6.4	3.32	3.43	0.00
	17	4565	0.2307	0.4010	–0.0133	9.6652	240 26.0	2.27	3.94	+0.13
	22	4570	0.1280	0.4476	0.0263	9.6690	254 17.9	1.24	4.29	0.25
	27	4575	–0.0191	0.4616	0.0373	9.6663	268 7.6	+0.18	4.51	0.37
June	1	4580	+0.0928	0.4414	0.0456	9.6571	282 20.6	–0.96	4.60	0.48
	6	4585	0.1974	0.3862	0.0503	9.6412	297 24.5	2.29	4.48	0.59
	11	4590	0.2838	0.2976	0.0506	9.6186	313 52.4	3.85	4.04	0.68
	16	4595	0.3413	0.1783	0.0456	9.5897	332 25.3	5.66	2.96	0.76
	21	4600	0.3558	–0.0374	0.0351	9.5562	353 51.6	7.42	+ 0.68	0.73
	26	4605	0.3143	+0.1086	–0.0190	9.5224	18 57.2	8.29	– 2.87	+0.50
July	1	4610	0.2116	0.2321	+0.0007	9.4964	47 51.1	6.68	7.33	–0.02
	6	4615	+0.0602	0.3009	0.0201	9.4880	79 13.0	–2.01	10.06	0.67
	11	4620	–0.1063	0.2959	0.0346	9.5013	110 13.0	+3.24	9.03	1.05
	16	4625	0.2495	0.2240	0.0413	9.5300	138 15.1	6.24	5.60	1.03
	21	4630	0.3503	+0.1084	0.0401	9.5644	162 26.8	6.83	– 2.01	0.78
	26	4635	0.3931	–0.0225	0.0333	9.5970	183 7.5	6.20	+ 0.35	0.52
	31	4640	0.3924	0.1521	0.0223	9.6245	201 6.8	5.11	1.99	0.29
Aug.	5	4645	0.3528	0.2671	+0.0090	9.6455	217 11.5	3.97	3.00	–0.10
	10	4650	0.2832	0.3591	–0.0050	9.6598	232 0.6	2.89	3.66	+0.05
	15	4655	0.1914	0.4227	0.0187	9.6675	246 5.7	1.86	4.10	0.18
	20	4660	–0.0854	0.4572	0.0310	9.6687	259 53.7	+0.83	4.39	0.29
	25	4665	+0.0268	0.4575	0.0411	9.6633	273 49.8	–0.26	4.56	0.41
	30	4670	0.1366	0.4232	0.0479	9.6514	288 20.1	1.48	4.57	0.52
Sept.	4	4675	0.2352	0.3543	0.0510	9.6328	303 53.5	2.89	4.36	0.63
	9	4680	+0.3116	–0.2521	–0.0493	9.6075	321 6.8	–4.56	+ 3.70	+0.72

Note.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

MERCURY.

1871.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$
	240								
Sept. 14	4685	+0.3531	-0.1230	-0.0421	9.5765	340° 44′.1	-6.40	+ 2.24	+0.76
19	4690	0.3462	+0.0227	0.0291	9.5421	3 34.9	7.96	- 0.53	0.67
24	4695	0.2799	0.1632	-0.0112	9.5103	30 16.0	8.02	4.68	+0.32
29	4700	+0.1544	0.2682	+0.0089	9.4904	60 26.0	-5.08	8.82	-0.29
Oct. 4	4705	-0.0084	0.3080	0.0268	9.4909	92 1.6	+0.25	10.09	0.87
9	4710	0.1691	0.2731	0.0383	9.5117	122 3.4	4.80	7.77	1.09
14	4715	0.2953	0.1808	0.0418	9.5438	148 33.1	6.71	4.12	0.95
19	4720	0.3713	+0.0619	0.0384	9.5781	171 13.4	6.70	- 1.14	0.69
24	4725	0.3980	-0.0742	0.0292	9.6089	190 42.4	5.78	+ 1.10	0.43
29	4730	0.3805	0.2010	0.0171	9.6338	207 49.9	4.63	2.45	0.21
Nov. 3	4735	0.3277	0.3075	+0.0033	9.6521	223 19.7	3.52	3.30	-0.03
8	4740	0.2480	0.3889	-0.0107	9.6638	237 47.5	2.47	3.86	+0.10
13	4745	0.1495	0.4413	0.0239	9.6688	251 42.6	1.44	4.23	0.23
18	4750	-0.0402	0.4615	0.0354	9.6673	265 30.9	+0.40	4.47	0.34
23	4755	+0.0721	0.4478	0.0443	9.6593	279 37.5	-0.73	4.59	0.45
28	4760	0.1785	0.3995	0.0498	9.6446	294 29.5	2.02	4.52	0.56
Dec. 3	4765	0.2696	0.3166	0.0509	9.6233	310 38.8	3.54	4.16	0.67
8	4770	0.3333	0.2025	0.0470	9.5955	328 44.8	5.30	3.23	0.74
13	4775	0.3569	-0.0648	0.0374	9.5627	349 34.7	7.13	+ 1.30	0.75
18	4780	0.3268	+0.0820	0.0224	9.5294	13 56.5	8.26	- 2.08	0.57
23	4785	0.2354	0.2121	-0.0031	9.5002	42 10.3	7.24	6.52	+0.09
28	4790	+0.0909	0.2934	+0.0167	9.4879	73 15.6	-3.04	9.82	-0.56
33	4795	-0.0757	0.3026	0.0323	9.4973	104 33.7	+2.37	9.48	1.01
38	4800	-0.2257	+0.2415	+0.0407	9.5239	133 17.4	+5.88	- 6.30	-1.06

VENUS.

1871.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
	240								
	4425	+0.2296	-0.6904	-0.0234	9.8621	288° 26′.3	- 7.23	+21.74	+0.74
Jan. 2	4430	0.3223	0.6523	0.0282	9.8622	296 20.8	10.13	20.52	0.89
7	4435	0.4089	0.6017	0.0324	9.8623	304 15.0	12.86	18.92	1.02
12	4440	0.4877	0.5395	0.0361	9.8623	312 9.1	15.34	16.97	1.13
17	4445	0.5572	0.4671	0.0389	9.8623	320 3.3	17.53	14.69	1.22
22	4450	0.6160	0.3859	0.0411	9.8622	227 57.6	19.37	12.14	1.29
27	4455	0.6630	0.2972	0.0425	9.8620	335 52.1	20.88	9.36	1.34
Feb. 1	4460	0.6973	0.2028	0.0430	9.8618	343 47.2	21.99	6.40	1.36
6	4465	0.7182	0.1045	0.0428	9.8615	351 42.7	22.69	3.30	1.35
11	4470	0.7253	-0.0042	0.0417	9.8612	359 38.8	22.97	+ 0.13	1.32
16	4475	0.7184	+0.0962	0.0398	9.8609	7 35.6	22.80	- 3.05	1.26
21	4480	0.6977	0.1948	0.0372	9.8605	15 33.2	22.20	6.19	1.18
26	4485	0.6635	0.2895	0.0338	9.8602	23 31.6	21.16	9.24	1.08
March 3	4490	0.6164	0.3787	0.0298	9.8598	31 30.9	19.72	12.11	0.95
8	4495	0.5573	0.4605	0.0252	9.8593	39 31.0	17.88	14.77	0.81
13	4500	0.4873	0.5333	0.0201	9.8589	47 32.2	15.68	17.15	0.65
18	4505	0.4077	0.5956	0.0146	9.8584	55 34.2	13.16	19.23	0.47
23	4510	0.3202	0.6462	0.0088	9.8581	63 37.2	10.37	20.91	0.29
28	4515	0.2264	0.6841	-0.0029	9.8577	71 40.9	7.35	22.20	+0.09
April 2	4520	0.1281	0.7086	+0.0031	9.8574	79 45.5	4.17	23.02	-0.12
7	4525	+0.0273	0.7190	0.0091	9.8571	87 50.8	- 0.89	23.41	0.30
12	4530	-0.0742	0.7152	0.0148	9.8569	95 56.7	+ 2.42	23.34	0.48
17	4535	-0.1743	+0.6972	+0.0203	9.8566	104 3.1	+ 5.70	-22.78	-0.66

NOTE.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

VENUS.

1871.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
	240								
April 22	4540	−0.2710	+0.6653	+0.0254	9.8565	112° 9′.9	+ 8.89	−21.77	−0.83
27	4545	0.3623	0.6202	0.0299	9.8564	120 17.0	11.86	20.30	0.98
May 2	4550	0.4463	0.5627	0.0339	9.8564	128 24.3	14.61	18.42	1.11
7	4555	0.5215	0.4940	0.0372	9.8564	136 31.5	17.07	16.17	1.22
12	4560	0.5862	0.4154	0.0397	9.8564	144 38.7	19.19	13.59	1.30
17	4565	0.6393	0.3287	0.0415	9.8566	152 45.6	20.90	10.75	1.36
22	4570	0.6796	0.2354	0.0424	9.8568	160 52.1	22.18	7.68	1.38
27	4575	0.7061	0.1373	0.0425	9.8570	168 58.2	23.02	4.48	1.39
June 1	4580	0.7185	+0.0366	0.0418	9.8573	177 3.7	23.37	− 1.19	1.36
6	4585	0.7167	−0.0649	0.0402	9.8576	185 8.5	23.26	+ 2.11	1.30
11	4590	0.7009	0.1650	0.0378	9.8580	193 12.5	22.69	5.34	1.22
16	4595	0.6716	0.2619	0.0347	9.8584	201 15.6	21.69	8.46	1.12
21	4600	0.6291	0.3537	0.0309	9.8588	209 17.9	20.25	11.39	0.99
26	4605	0.5743	0.4386	0.0265	9.8592	217 19.3	18.44	14.09	0.85
July 1	4610	0.5082	0.5149	0.0216	9.8596	225 19.8	16.27	16.48	0.69
6	4615	0.4323	0.5812	0.0162	9.8600	233 19.4	13.80	18.56	0.52
11	4620	0.3479	0.6361	0.0106	9.8604	241 18.1	11.08	20.25	0.34
16	4625	0.2568	0.6788	+0.0047	9.8608	249 15.9	8.15	21.55	−0.15
21	4630	0.1608	0.7083	−0.0012	9.8611	257 12.9	5.09	22.44	+0.03
26	4635	−0.0616	0.7242	0.0072	9.8614	265 9.4	+ 1.95	22.90	0.23
31	4640	+0.0387	0.7261	0.0130	9.8617	273 5.0	− 1.22	22.91	0.41
Aug. 5	4645	0.1383	0.7142	0.0185	9.8619	281 0.1	4.35	22.50	0.58
10	4650	0.2353	0.6885	0.0237	9.8621	288 54.8	7.41	21.67	0.75
15	4655	0.3277	0.6496	0.0284	9.8622	296 49.4	10.31	20.43	0.89
20	4660	0.4139	0.5983	0.0326	9.8623	304 43.5	13.01	18.81	1.03
25	4665	0.4922	0.5356	0.0362	9.8623	312 37.6	15.47	16.83	1.14
30	4670	0.5610	0.4626	0.0391	9.8622	320 31.8	17.64	14.55	1.23
Sept. 4	4675	0.6191	0.3808	0.0412	9.8622	328 26.1	19.48	11.98	1.30
9	4680	0.6654	0.2917	0.0425	9.8620	336 20.7	20.96	9.19	1.34
14	4685	0.6989	0.1970	0.0430	9.8618	344 15.8	22.03	6.21	1.36
19	4690	0.7190	−0.0985	0.0427	9.8615	352 11.3	22.71	+ 3.11	1.35
24	4695	0.7253	+0.0019	0.0416	9.8612	0 7.5	22.96	− 0.06	1.32
29	4700	0.7176	0.1022	0.0397	9.8609	8 4.3	22.78	3.25	1.26
Oct. 4	4705	0.6961	0.2006	0.0370	9.8605	16 1.9	22.15	6.38	1.17
9	4710	0.6610	0.2951	0.0336	9.8601	24 0.4	21.09	9.41	1.07
14	4715	0.6132	0.3838	0.0295	9.8597	31 59.7	19.62	12.28	0.95
19	4720	0.5534	0.4651	0.0245	9.8593	39 59.9	17.75	14.92	0.80
24	4725	0.4828	0.5373	0.0194	9.8589	48 1.0	15.53	17.29	0.64
29	4730	0.4028	0.5990	0.0141	9.8585	56 3.1	12.99	19.32	0.46
Nov. 3	4735	0.3148	0.6488	0.0085	9.8580	64 6.0	10.19	21.00	0.27
8	4740	0.2207	0.6860	−0.0025	9.8577	72 9.9	7.16	22.25	+0.08
13	4745	0.1223	0.7097	+0.0035	9.8574	80 14.4	3.97	23.07	−0.13
18	4750	+0.0213	0.7193	0.0094	9.8571	88 19.7	− 0.69	23.43	0.31
23	4755	−0.0800	0.7145	0.0152	9.8569	96 25.5	+ 2.61	23.32	0.49
28	4760	0.1798	0.6957	0.0206	9.8567	104 31.9	5.88	22.74	0.67
Dec. 3	4765	0.2761	0.6630	0.0257	9.8565	112 38.7	9.03	21.69	0.84
8	4770	0.3668	0.6172	0.0302	9.8564	120 45.8	12.00	20.20	0.99
13	4775	0.4501	0.5590	0.0341	9.8564	128 52.9	14.73	18.30	1.12
18	4780	0.5244	0.4897	0.0374	9.8564	137 0.2	17.17	16.03	1.22
23	4785	0.5883	0.4106	0.0399	9.8565	145 7.4	19.25	13.43	1.30
28	4790	0.6406	0.3234	0.0416	9.8566	153 14.2	20.94	10.57	1.36
33	4795	−0.6801	+0.2295	+0.0424	9.8568	161 20.6	+22.21	− 7.50	−1.39

NOTE.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

THE EARTH.

1871.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^3}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
	240								
	4420	−0.0303	+0.9831	0.0000	9.9928	91° 46′.3	+0.43	−13.79	0.00
Jan. 2	4430	0.2038	0.9621		9.9927	101 57.8	2.86	13.50	
12	4440	0.3708	0.9111		9.9927	112 9.1	5.20	12.79	
22	4450	0.5265	0.8318		9.9932	122 19.9	7.36	11.66	
Feb. 1	4460	0.6658	0.7268		9.9937	132 29.4	9.27	10.13	
11	4470	0.7845	0.5995		9.9945	142 36.9	10.87	8.31	
21	4480	0.8792	0.4539		9.9954	152 42.1	12.11	6.25	
March 3	4490	0.9473	0.2943		9.9965	162 44.5	12.95	4.02	
13	4500	0.9867	+0.1258		9.9976	172 43.9	13.38	− 1.71	
23	4510	0.9963	−0.0464		9.9989	182 40.0	13.39	+ 0.62	
April 2	4520	0.9764	0.2171		0.0001	192 32.6	13.00	2.89	
12	4530	0.9277	0.3817		0.0013	202 21.9	12.24	5.05	
22	4540	0.8518	0.5350		0.0025	212 8.0	11.16	7.02	
May 2	4550	0.7511	0.6727		0.0036	221 50.9	9.78	8.75	
12	4560	0.6289	0.7912		0.0046	231 30.9	8.13	10.22	
22	4570	0.4888	0.8870		0.0055	241 18.4	6.28	11.39	
June 1	4580	0.3347	0.9576		0.0062	250 43.9	4.28	12.24	
11	4590	0.1711	1.0011		0.0067	260 17.9	2.18	12.75	
21	4600	−0.0027	1.0165		0.0071	269 50.7	+ 0.04	12.91	
July 1	4610	+0.1657	1.0033		0.0072	279 22.8	− 2.10	12.73	
11	4620	0.3295	0.9618		0.0071	288 54.7	4.18	12.21	
21	4630	0.4841	0.8933		0.0069	298 27.2	6.16	11.37	
31	4640	0.6280	0.7997		0.0064	308 0.8	7.98	10.21	
Aug. 10	4650	0.7482	0.6833		0.0057	317 35.8	9.60	8.76	
20	4660	0.8502	0.5477		0.0049	327 12.7	10.97	7.07	
30	4670	0.9279	0.3965		0.0039	336 51.9	12.05	5.15	
Sept. 9	4680	0.9791	0.2339		0.0029	346 33.9	12.81	3.06	
19	4690	1.0019	−0.0645		0.0017	356 19.0	13.21	+ 0.85	
29	4700	0.9954	+0.1068		0.0005	6 7.3	13.23	− 1.42	
Oct. 9	4710	0.9597	0.2749		9.9992	15 59.0	12.87	3.69	
19	4720	0.8955	0.4348		9.9980	25 54.1	12.11	5.88	
29	4730	0.8045	0.5817		9.9968	35 52.5	10.97	7.93	
Nov. 8	4740	0.6891	0.7111		9.9957	45 54.1	9.47	9.78	
18	4750	0.5527	0.8187		9.9947	55 58.6	7.65	11.33	
28	4760	0.3996	0.9014		9.9939	66 5.6	5.56	12.54	
Dec. 8	4270	0.2342	0.9566		9.9933	76 14.6	3.27	13.37	
18	4780	+0.0615	0.9820		9.9929	86 25.0	− 0.86	13.76	
28	4790	−0.1131	0.9768		9.9927	96 36.3	+ 1.59	13.71	
38	4800	−0.2842	+0.9415	0.0000	9.9927	106 47.9	+ 3.99	−13.21	0.00

MARS.

1871.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^3}{r^3}z$.
	240								
	4420	−1.2945	+1.0407	+0.0536	0.2206	141° 12′.3	+0.50	−0.40	−0.02
Jan. 2	4430	1.3721	0.9401	0.0533	0.2212	145 35.1	0.53	0.36	0.02
12	4440	1.4410	0.8335	0.0527	0.2215	149 57.3	0.55	0.32	0.02
22	4450	1.5006	0.7215	0.0518	0.2216	154 19.2	0.57	0.28	0.02
Feb. 1	4460	1.5507	0.6049	0.0505	0.2215	158 41.1	0.59	0.23	0.02
11	4470	1.5908	0.4844	0.0489	0.2210	163 3.4	0.61	0.19	0.02
21	4480	−1.6206	+0.3608	+0.0470	0.2204	167 26.4	+0.62	−0.14	−0.02

NOTE.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

MARS.

1871.		Julian Day.	$x.$	$y.$	$z.$	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x.$	$-\frac{k^2}{r^3}y.$	$-\frac{k^2}{r^3}z.$
March	3	240 4490	-1.6400	+0.2349	+0.0448	0.2194	171° 50′.4	+0.64	-0.09	-0.02
	13	4500	1.6488	+0.1074	0.0422	0.2182	176 15.7	0.65	-0.04	0.02
	23	4510	1.6467	-0.0207	0.0394	0.2168	180 42.6	0.65	+0.01	0.02
April	2	4520	1.6338	0.1487	0.0364	0.2151	185 11.4	0.65	0.06	0.01
	12	4530	1.6099	0.2757	0.0331	0.2132	189 42.5	0.65	0.11	0.01
	22	4540	1.5751	0.4008	0.0296	0.2110	194 16.1	0.65	0.16	0.01
May	2	4550	1.5295	0.5232	0.0259	0.2086	198 52.7	0.64	0.22	0.01
	12	4560	1.4731	0.6419	0.0220	0.2060	203 32.4	0.63	0.27	0.01
	22	4570	1.4063	0.7561	0.0179	0.2032	208 15.6	0.61	0.33	0.01
June	1	4580	1.3292	0.8647	0.0137	0.2002	213 2.6	0.59	0.38	-0.01
	11	4590	1.2423	0.9669	0.0094	0.1971	217 53.7	0.56	0.44	0.00
	21	4600	1.1459	1.0618	0.0051	0.1938	222 49.2	0.53	0.49	0.00
July	1	4610	1.0407	1.1485	+0.0007	0.1903	227 49.3	0.49	0.54	0.00
	11	4620	0.9272	1.2260	-0.0038	0.1867	232 54.4	0.45	0.60	0.00
	21	4630	0.8062	1.2935	0.0081	0.1830	238 4.6	0.40	0.65	0.00
	31	4640	0.6784	1.3503	0.0124	0.1793	243 20.1	0.35	0.69	+0.01
Aug.	10	4650	0.5449	1.3954	0.0166	0.1755	248 41.2	0.29	0.73	0.01
	20	4660	0.4065	1.4283	0.0207	0.1718	254 7.8	0.22	0.77	0.01
	30	4670	0.2645	1.4483	0.0246	0.1680	259 40.2	0.15	0.80	0.01
Sept.	9	4680	-0.1200	1.4549	0.0282	0.1644	265 18.2	+0.07	0.83	0.02
	19	4690	+0.0256	1.4477	0.0316	0.1608	271 2.0	-0.01	0.84	0.02
	29	4700	0.1709	1.4263	0.0346	0.1574	276 51.2	0.10	0.85	0.02
Oct.	9	4710	0.3146	1.3908	0.0373	0.1542	282 45.9	0.19	0.85	0.02
	19	4720	0.4550	1.3411	0.0397	0.1513	288 45.6	0.28	0.83	0.03
	29	4730	0.5907	1.2774	0.0416	0.1486	294 49.9	0.37	0.81	0.03
Nov.	8	4740	0.7201	1.2003	0.0431	0.1462	300 58.6	0.46	0.77	0.03
	18	4750	0.8418	1.1102	0.0441	0.1442	307 11.0	0.55	0.72	0.03
	28	4760	0.9543	1.0080	0.0447	0.1426	313 26.4	0.63	0.66	0.03
Dec.	8	4770	1.0563	0.8947	0.0447	0.1414	319 44.4	0.70	0.59	0.03
	18	4780	1.1465	0.7714	0.0443	0.1407	326 4.0	0.77	0.52	0.03
	28	4790	1.2238	0.6395	0.0433	0.1404	332 24.6	0.82	0.43	0.03
	38	4800	+1.2875	-0.5004	-0.0419	0.1405	338 45.3	-0.86	+0.33	+0.03

JUPITER.

1871.		Julian Day.	$x.$	$y.$	$z.$	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x.$	$-\frac{k^2}{r^3}y.$	$-\frac{k^2}{r^3}z.$
		240 4420	+0.68450	+5.05460	-0.03373	0.70764	82° 17′ 3″	-23.30	-172.08	+1.15
Jan	2	4430	0.60872	5.06775	0.03206	0.70793	83 8 50	20.67	172.18	1.09
	12	4440	0.53279	5.07974	0.03039	0.70822	84 0 32	18.06	172.24	1.03
	22	4450	0.45675	5.09061	0.02872	0.70852	84 52 10	15.45	172.26	0.97
Feb.	1	4460	0.38062	5.10036	0.02703	0.70881	85 43 44	12.85	172.24	0.91
	11	4470	0.30441	5.10899	0.02534	0.70911	86 35 13	10.26	172.17	0.85
	21	4480	0.22813	5.11649	0.02364	0.70941	87 26 39	7.67	172.07	0.79
March	3	4490	0.15181	5.12286	0.02194	0.70971	88 18 0	5.09	171.93	0.74
	13	4500	+0.07545	5.12810	0.02023	0.71001	89 9 16	- 2.53	171.75	0.68
	23	4510	-0.00093	5.13221	0.01852	0.71031	90 0 29	+ 0.03	171.53	0.62
April	2	4520	0.07731	5.13520	0.01681	0.71061	90 51 37	2.58	171.27	0.56
	12	4530	0.15367	5.13707	0.01509	0.71091	91 42 41	5.12	170.98	0.50
	22	4540	0.22999	5.13782	0.01337	0.71122	92 33 41	7.64	170.65	0.44
May	2	4550	-0.30626	+5.13745	-0.01165	0.71152	93 24 36	+10.15	-170.28	+0.39

NOTE.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

JUPITER.

1871.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
	240								
May 12	4560	−0.38247	+5.13597	−0.00992	0.71182	94° 15′ 27″	+12.65	−169.87	+0.33
22	4570	0.45860	5.13337	0.00819	0.71213	95 6 14	15.14	169.43	0.27
June 1	4580	0.53462	5.12967	0.00646	0.71244	95 56 57	17.61	168.95	0.21
11	4590	0.61053	5.12485	0.00472	0.71274	96 47 35	20.07	168.43	0.16
21	4600	0.68631	5.11892	0.00299	0.71305	97 38 9	22.51	167.88	0.10
July 1	4610	0.76194	5.11190	−0.00126	0.71335	98 28 39	24.94	167.30	+0.04
11	4620	0.83741	5.10378	+0.00048	0.71366	99 19 5	27.35	166.68	−0.02
21	4630	0.91270	5.09457	0.00221	0.71397	100 9 26	29.74	166.03	0.07
31	4640	0.98779	5.08427	0.00395	0.71427	100 59 43	32.12	165.34	0.13
Aug. 10	4650	1.06267	5.07288	0.00568	0.71458	101 49 55	34.48	164.62	0.18
20	4660	1.13733	5.06042	0.00741	0.71489	102 40 4	36.83	163.87	0.24
30	4670	1.21174	5.04688	0.00914	0.71519	103 30 8	39.16	163.08	0.30
Sept. 9	4680	1.28590	5.03227	0.01087	0.71550	104 20 8	41.47	162.27	0.35
19	4690	1.35979	5.01660	0.01260	0.71581	105 10 4	43.76	161.43	0.41
29	4700	1.43339	4.99987	0.01432	0.71611	105 59 55	46.03	160.55	0.46
Oct. 9	4710	1.50668	4.98209	0.01604	0.71642	106 49 42	48.28	159.64	0.51
19	4720	1.57966	4.96326	0.01776	0.71672	107 39 25	50.51	158.70	0.57
29	4730	1.65231	4.94339	0.01947	0.71703	108 29 4	52.72	157.73	0.62
Nov. 8	4740	1.72462	4.92249	0.02118	0.71733	109 18 39	54.92	156.73	0.67
18	4750	1.79657	4.90057	0.02289	0.71763	110 8 9	57.09	155.71	0.73
28	4760	1.86814	4.87763	0.02459	0.71794	110 57 36	59.24	154.66	0.78
Dec. 8	4770	1.93932	4.85367	0.02628	0.71824	111 46 58	61.37	153.58	0.83
18	4780	2.01010	4.82870	0.02797	0.71854	112 36 16	63.47	152.47	0.88
28	4790	2.08046	4.80273	0.02965	0.71884	113 25 30	65.55	151.34	0.93
38	4800	−2.15039	+4.77578	+0.03133	0.71914	114 14 40	+67.62	−150.18	−0.99

SATURN.

1871.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$
	240								
	4420	+0.17385	−10.04840	+0.16065	1.00221	270° 58′ 21″	−0.23	+13.38	0.21
Jan 2	4430	0.22652	10.04741	0.15852	1.00222	271 16 23	0.30	13.38	0.21
12	4440	0.27919	10.04614	0.15638	1.00222	271 34 26	0.37	13.38	0.21
22	4450	0.33185	10.04458	0.15424	1.00222	271 52 28	0.44	13.37	0.21
Feb. 1	4460	0.38450	10.04273	0.15210	1.00222	272 10 30	0.51	13.37	0.20
11	4470	0.43714	10.04059	0.14995	1.00222	272 28 32	0.58	13.37	0.20
21	4480	0.48977	10.03815	0.14780	1.00222	272 46 34	0.65	13.37	0.20
March 3	4490	0.54239	10.03542	0.14564	1.00221	273 4 36	0.72	13.36	0.19
13	4500	0.59499	10.03240	0.14348	1.00221	273 22 38	0.79	13.36	0.19
23	4510	0.64757	10.02909	0.14131	1.00221	273 40 40	0.86	13.36	0.19
April 2	4520	0.70014	10.02548	0.13914	1.00220	273 58 42	0.93	13.35	0.19
12	4530	0.75268	10.02159	0.13697	1.00220	274 16 45	1.00	13.37	0.18
22	4540	0.80520	10.01741	0.13479	1.00219	274 34 47	1.07	13.34	0.18
May 2	4550	0.85770	10.01293	0.13261	1.00219	274 52 49	1.14	13.34	0.18
12	4560	0.91017	10.00816	0.13043	1.00218	275 10 51	1.21	13.33	0.17
22	4570	0.96262	10.00310	0.12824	1.00217	275 28 54	1.28	13.32	0.17
June 1	4580	1.01504	9.99775	0.12605	1.00216	275 46 56	1.35	13.32	0.17
11	4590	1.06743	9.99210	0.12385	1.00215	276 4 59	1.42	13.31	0.16
21	4600	1.11978	9.98616	0.12165	1.00214	276 23 1	1.49	13.31	0.16
July 1	4610	1.17210	9.97994	0.11944	1.00213	276 41 3	1.56	13.30	0.16
11	4620	+1.22439	− 9.97343	+0.11723	1.00212	276 59 5	−1.63	+13.29	−0.16

Note.—The Epoch is the 2405,000th day of the Julian Peroid = 1872, July 25.

SATURN.

1871.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
July 21	240 4630	+1.27665	−9.96663	+0.11502	1.00211	277° 17′ 8″	−1.70	+13.28	−0.15
31	4640	1.32887	9.95953	0.11281	1.00210	277 35 11	1.77	13.27	0.15
Aug. 10	4650	1.38105	9.95214	0.11059	1.00208	277 53 14	1.84	13.26	0.15
20	4660	1.43319	9.94446	0.10837	1.00207	278 11 17	1.91	13.25	0.15
30	4670	1.48529	9.93650	0.10615	1.00206	278 29 20	1.98	13.24	0.14
Sept. 9	4680	1.53735	9.92825	0.10392	1.00204	278 47 23	2.05	13.24	0.14
19	4690	1.58936	9.91971	0.10169	1.00203	279 5 26	2.12	13.23	0.14
29	4700	1.64133	9.91088	0.09946	1.00201	279 23 29	2.19	13.22	0.13
Oct. 9	4710	1.69325	9.90176	0.09722	1.00199	279 41 32	2.26	13.20	0.13
19	4720	1.74512	9.89235	0.09498	1.00197	279 59 35	2.33	13.19	0.13
29	4730	1.79694	9.88266	0.09274	1.00196	280 17 39	2.40	13.18	0.12
Nov. 8	4740	1.84871	9.87268	0.09050	1.00194	280 35 42	2.47	13.17	0.12
18	4750	1.90043	9.86241	0.08825	1.00192	280 53 46	2.54	13.16	0.12
28	4760	1.95209	9.85185	0.08600	1.00190	281 11 50	2.61	13.15	0.12
Dec. 8	4770	2.00369	9.84101	0.08375	1.00188	281 29 54	2.67	13.13	0.11
18	4780	2.05524	9.82988	0.08150	1.00185	281 47 58	2.74	13.12	0.11
28	4790	2.10673	9.81846	0.07924	1.00183	282 6 2	2.81	13.11	0.11
38	4800	+2.15816	−9.80675	+0.07698	1.00181	282 24 6	−2.88	+13.10	−0.10

URANUS.

1871.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
	240 4400	−7.59418	+17.02679	+0.16485	1.27055	114° 2′ 15″	+0.23	−0.51	−0.01
Jan. 12	4440	7.73934	16.95485	0.16645	1.27041	114 32 7	0.23	0.51	0.01
Feb. 21	4480	7.88396	16.88157	0.16804	1.27027	115 2 0	0.24	0.51	0.01
April 2	4520	8.02797	16.80705	0.16962	1.27014	115 31 54	0.24	0.50	0.01
May 12	4560	8.17136	16.73127	0.17118	1.27000	116 1 49	0.25	0.50	0.01
June 21	4600	8.31414	16.65427	0.17270	1.27986	116 31 45	0.25	0.50	0.01
July 31	4640	8.45633	16.57603	0.17425	1.27973	117 1 43	0.25	0.49	0.01
Sept. 9	4680	8.59790	16.49655	0.17579	1.27960	117 31 41	0.26	0.49	0.01
Oct. 19	4720	8.73882	16.41583	0.17731	1.27946	118 1 41	0.26	0.49	0.01
Nov. 28	4760	8.87912	16.33393	0.17882	1.27933	118 31 42	0.26	0.48	0.01
Dec. 38	4800	−9.01878	+16.25082	+0.18029	1.27920	119 1 45	+0.27	−0.48	−0.01

NEPTUNE.

1871.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
	240 4400	+27.8897	+10.5620	−0.8738	1.47473	20° 45.′0	−0.26	−0.10	+0.01
Jan. 12	4440	27.8440	10.6801	0.8751	1.47472	20 59.6	0.26	0.10	0.01
Feb. 21	4480	27.7978	10.7981	0.8764	1.47472	21 14.2	0.26	0.10	0.01
April 2	4520	27.7511	10.9158	0.8777	1.47471	21 28.8	0.26	0.10	0.01
May 12	4560	27.7039	11.0333	0.8789	1.47470	21 43.4	0.26	0.10	0.01
June 21	4600	27.6562	11.1506	0.8802	1.47469	21 58.0	0.26	0.11	0.01
July 31	4640	27.6080	11.2677	0.8814	1.47468	22 12.6	0.26	0.11	0.01
Sept. 9	4680	27.5593	11.3846	0.8826	1.47467	22 27.2	0.26	0.11	0.01
Oct. 19	4720	27.5100	11.5012	0.8838	1.47466	22 41.8	0.26	0.11	0.01
Nov. 28	4760	27.4602	11.6176	0.8850	1.47466	22 56.4	0.26	0.11	0.01
Dec. 38	4800	+27.4099	+11.7338	−0.8861	1.47465	23 11.0	−0.26	−0.11	+0.01

NOTE.—The Epoch is the 2405,000th day of the Julian Peroid = 1872, July 25.

INCLINATIONS AND NODES.

Planet.	Inclination.	Increase in 100 Days.	Longitude of Ascending Node.	Increase in 100 Days.
	° ′ ″	″	° ′ ″	″
Mercury . . .	7 0 9.8	+0.01947	46 49 3	+11.643
Venus	3 23 35.4	+0.01195	75 33 5	9.004
Mars	1 51 1.8	—0.00586	48 34 2	7.585
Jupiter	1 18 35.1	—0.06189	99 7 16	9.402
Saturn	2 29 19.2	—0.03824	112 30 56	8.425
Uranus	0 46 30.2	+0.00835	73 20 59	4.898
Neptune . . .	1 46 54.3	—0.09020	130 22 29	+10.885

Note.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

MASSES. Sun's=1.

Planet.	Mass.	Log. of Mass.	Authority.
Mercury . .	$\frac{1}{4865751}$ =.000 000 206	93.31285	Encke, *A N.*, No. 443.
Venus . . .	$\frac{1}{390000}$ =.000 002 564	94.40893	Le Verrier, *Théor. de Merc.*, p. 115.
The Earth .	$\frac{1}{354936}$ =.000 002 817	94.44985	Le Verrier, *Théor. de Merc.*, p. 26.
Mars . . .	$\frac{1}{2680637}$ =.000 000 373	93.57176	Burckhardt, *Conn. des Temps.*, 1816, p. 343.
Jupiter . .	$\frac{1}{1047.879 \pm .235}$ =.000 954 308	96.979689	Bessel, *Die Masse des Jupiter*, p. 64.
Saturn . . .	$\frac{1}{3501.6}$ =.000 285 584	96.455733	Bessel, *Comptes Rendus*, 1841.
Uranus . .	$\frac{1}{24905}$ =.000 040 153	95.60371	Lamont, *Mem. Ast. Soc.*, Vol. XI. p. 54.
Neptune . .	$\frac{1}{18780}$ =.000 053 248	95.72630	Peirce, *Am. Ac. Proc.*, Vol. I. p. 333.

ECLIPSES IN 1871.

In the year 1871 there will be four Eclipses; two of the Sun, and two of the Moon.

I. A Partial Eclipse of the Moon, January 6, 1871, partly visible at Washington, with the following elements:

Washington mean time of ☍ in Right Ascension, January $6^{d}\ 4^{h}\ 6^{m}\ 46^{s}.8$.

	h m s		s
Sun's Right Ascension	19 10 12.67	Hourly Motion	10.94
Moon's Right Ascension	7 10 12.67	" "	135.03
	° ′ ″		′ ″
Sun's Declination	−22 28 27.0	Hourly Motion	+0 18.4
Moon's Declination	+23 2 26.1	" "	−0 53.3
Sun's Equa. Hor. Par.	9.0	True Semidiameter	16 16.1
Moon's Equa. Hor. Par.	55 16.9	" "	15 3.1

From these elements may be deduced the following results:—

	d	h m	
Moon enters Penumbra, January	6	1 18.9	Washington mean time.
Moon enters Shadow	6	2 37.6	" "
Middle of the Eclipse	6	4 8.3	" "
Moon leaves Shadow	6	5 38.9	" "
Moon leaves Penumbra	6	6 57.6	" "

First contact of Shadow with Moon's limb 129° from north point towards the East, when the Moon is in the zenith in longitude 218° 42′ West from Washington and in latitude 23° 12′ North.

Last contact of Shadow with Moon's limb 127° from north point towards the West, when the Moon is in the zenith in longitude 262° 22′ West from Washington and in latitude 23° 9′ North.

Magnitude of Eclipse = 0.693 (Moon's diameter = 1).

II. An Annular Eclipse of the Sun, June 17, 1871, invisible at Washington, with the following elements:

Washington mean time of ☌ in Right Ascension June $17^{d}\ 9^{h}\ 19^{m}\ 52^{s}.2$.

	h m s		s s
Sun's and Moon's R. A.	5 44 11.10	Hourly Motions	10.40 and 128.03
	° ′ ″		′ ″
Sun's Declination	+23 24 21.4	Hourly Motion	+ 0 3.9
Moon's Declination	+22 59 37.8	" "	+ 3 32.3
Sun's Equa. Hor. Par.	8.7	True Semidiameter	15 44.5
Moon's Equa. Hor. Par.	54 2.1	" "	14 42.7

From these elements may be deduced the following results:—

Eclipse begins on the Earth June $17^{d}\ 6^{h}\ 29^{m}.3$, Washington mean time, in longitude 176° 59′.8 West from Washington, and in latitude 22° 13′.4 South.

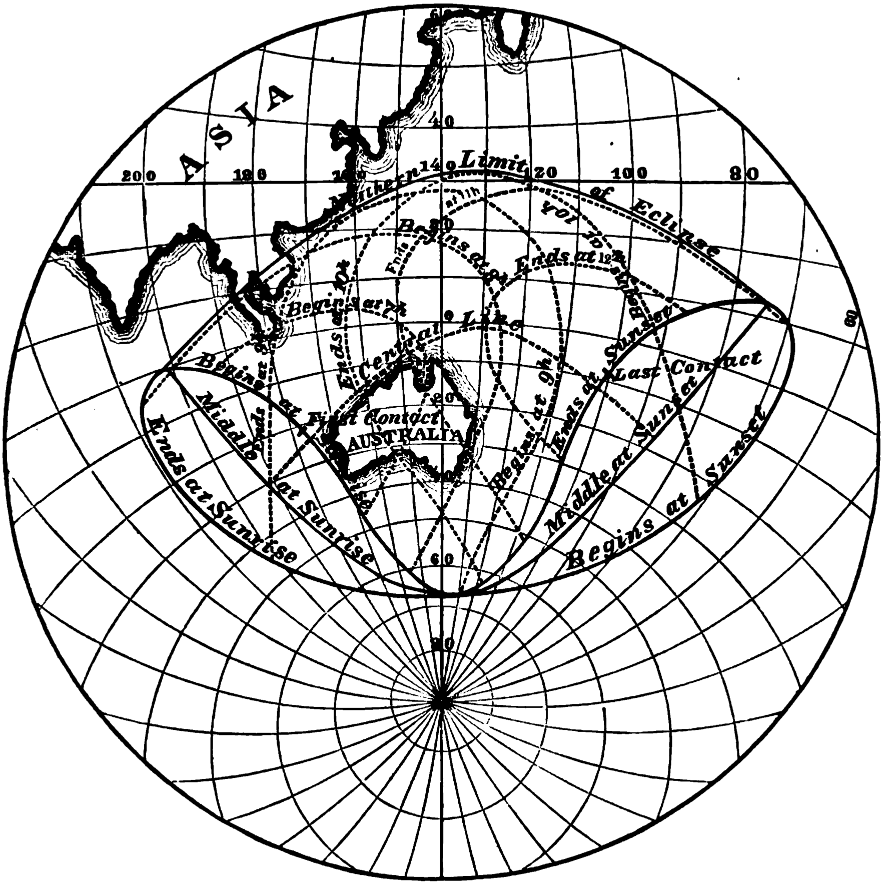
Central Eclipse begins on the Earth $7^{h}\ 41^{m}.4$, in longitude 189° 53′.0 West from Washington, and in latitude 31° 24′.1 South.

Central Eclipse at Noon $9^{h}\ 19^{m}.8$, in longitude 139° 47′.5 West from Washington, and in latitude 3° 56′.5 South.

Central Eclipse ends on the Earth $11^{h}\ 12^{m}.1$, in longitude 86° 3′.6 West from Washington, and in latitude 18° 12′.4 South.

Eclipse ends on the Earth $12^{h}\ 24^{m}.2$, in longitude 99° 45′.0 West from Washington, and in latitude 8° 52′.1 South.

OUTLINES AND PATH OF THE PENUMBRA, AND THE CENTRAL LINE OF THE ANNULAR ECLIPSE OF JUNE 17, 1871.



DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h m				9.96	9.96	+9.59	+9.60	° ′ ″
6 20	–1.50484	–0.08763	–1.21903	3577	1847	4384	3620	94 50 58.5
6 30	1.42116	0.07676	1.20816	3577	1846	4387	3623	97 20 57.9
6 40	1.33748	0.06589	1.19731	3576	1846	4389	3625	99 50 57.4
6 50	1.25380	0.05503	1.18645	3576	1845	4392	3628	102 20 56.8
7 0	1.17011	0.04417	1.17561	3575	1845	4395	3631	104 50 56.3
7 10	1.08642	0.03333	1.16477	3574	1844	4398	3634	107 20 55.7
7 20	1.00272	0.02249	1.15393	3574	1844	4401	3636	109 50 55.1
7 30	0.91902	0.01165	1.14311	3573	1843	4404	3639	112 20 54.6
7 40	0.83531	—0.00083	1.13229	3573	1843	4406	3642	114 50 54.0
7 50	0.75161	+0.00998	1.12148	3572	1842	4409	3644	117 20 53.5
8 0	0.66790	0.02079	1.11067	3572	1842	4412	3647	119 50 52.9
8 10	0.58419	0.03159	1.09987	3571	1841	4415	3650	122 20 52.3
8 20	0.50048	0.04239	1.08907	3571	1841	4418	3652	124 50 51.8
8 30	0.41676	0.05318	1.07828	3570	1840	4421	3655	127 20 51.2
8 40	0.33304	0.06396	1.06750	3570	1840	4423	3658	129 50 50.6
8 50	0.24932	0.07473	1.05673	3569	1839	4426	3660	132 20 50.1
9 0	0.16559	0.08550	1.04596	3569	1839	4429	3663	134 50 49.5
9 10	—0.08187	0.09626	1.03520	3568	1838	4432	3666	137 20 48.9
9 20	+0.00185	0.10701	1.02445	3568	1838	4435	3669	139 50 48.4
9 30	0.08557	0.11774	1.01370	3567	1837	4438	3672	142 20 47.8
9 40	0.16930	0.12847	1.00295	3567	1837	4440	3674	144 50 47.3
9 50	0.25303	0.13921	0.99221	3566	1836	4443	3677	147 20 46.7
10 0	0.33677	0.14993	0.98147	3566	1836	4446	3680	149 50 46.1
10 10	0.42050	0.16064	0.97074	3565	1835	4449	3683	152 20 45.6
10 20	0.50423	0.17134	0.96002	3565	1835	4451	3685	154 50 45.0
10 30	0.58796	0.18204	0.94932	3564	1834	4454	3688	157 20 44.4
10 40	0.67169	0.19272	0.93862	3564	1834	4457	3691	159 50 43.9
10 50	0.75542	0.20339	0.92793	3563	1833	4459	3693	162 20 43.3
11 0	0.83915	0.21404	0.91726	3563	1833	4462	3696	164 50 42.7
11 10	0.92288	0.22470	0.90658	3562	1832	4465	3699	167 20 42.2
11 20	1.00661	0.23535	0.89591	3562	1832	4467	3701	169 50 41.6
11 30	1.09034	0.24599	0.88525	3561	1831	4470	3704	172 20 41.1
11 40	1.17407	0.25662	0.87460	3561	1831	4473	3706	174 50 40.5
11 50	1.25780	0.26724	0.86396	3560	1830	4475	3709	177 20 40.0
12 0	1.34152	0.27785	0.85333	3560	1830	4478	3711	179 50 39.4
12 10	1.42525	0.28846	0.84270	3559	1829	4481	3714	182 20 38.8
12 20	1.50897	0.29905	0.83207	3559	1829	4484	3717	184 50 38.3
12 30	+1.59270	+0.30964	—0.82146	3558	1828	4487	3719	187 20 37.7

FOR SHADOW.

Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.
h m			h m		
7 40	—0.54743	—0.58569	9 30	—0.42886	—0.46710
7 50	0.53661	0.57489	9 40	0.41813	0.45635
8 0	0.52580	0.56408	9 50	0.40739	0.44561
8 10	0.51500	0.55328	10 0	0.39667	0.43487
8 20	0.50420	0.54248	10 10	0.38596	0.42414
8 30	0.49341	0.53169	10 20	0.37526	0.41342
8 40	0.48264	0.52090	10 30	0.36457	0.40271
8 50	0.47187	0.51013	10 40	0.35388	0.39202
9 0	0.46110	0.49936	10 50	0.34321	0.38133
9 10	0.45034	0.48860	11 0	0.33256	0.37066
9 20	0.43960	0.47784	11 10	0.32190	0.35998
9 30	—0.42886	—0.46710	11 20	—0.31125	—0.34931

A and μ are given in the Table for Penumbra, and the values of log E, log F, log G, and log H may be obtained from corresponding values for Penumbra, by numerically decreasing log E and increasing log F by 0.000004, and by numerically increasing log G by 0.000022 and decreasing log H by 0.000023.

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA IN UNITS OF THE SIXTH PLACE OF DECIMALS.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A′.	B′.	C′.
h m						
6 0	+8366.3	+1089.4	+1088.2	+139.44	+18.16	+18.14
6 30	8367.8	1087.2	1086.2	139.46	18.12	18.10
7 0	8369.1	1085.0	1084.2	139.48	18.08	18.07
7 30	8370.2	1082.7	1082.3	139.50	18.04	18.04
8 0	8371.1	1080.6	1080.4	139.52	18.01	18.01
8 30	8371.8	1078.5	1078.5	139.53	17.97	17.97
9 0	8372.3	1076.2	1076.6	139.54	17.94	17.94
9 30	8372.7	1073.8	1074.8	139.54	17.90	17.91
10 0	8372.9	1071.2	1072.6	139.55	17.85	17.88
10 30	8373.0	1068.5	1070.2	139.55	17.81	17.84
11 0	8373.0	1066.0	1067.8	139.55	17.77	17.80
11 30	8372.8	1063.5	1065.5	139.55	17.72	17.76
12 0	8372.6	1060.9	1063.3	139.54	17.68	17.72
12 30	+8372.2	+1058.3	+1061.3	+139.54	+17.64	+17.69

III. A Partial Eclipse of the Moon, July 1, 1871, invisible at Washington, with the following elements:—

Washington mean time of ☍ in Right Ascension, July 1ᵈ 20ʰ 21ᵐ 17ˢ.4.

	h m s		s
Sun's Right Ascension	6 44 13.38	Hourly Motion	10.33
Moon's Right Ascension	18 44 13.38	" "	165.10
	° ′ ″		′ ″
Sun's Declination	+23 3 59.0	Hourly Motion	— 0 10.9
Moon's Declination	—23 55 13.7	" "	— 0 33.1
Sun's Equa. Hor. Par.	8.7	True Semidiameter	15 44.0
Moon's Equa. Hor. Par.	61 1.0	" "	16 36.8

From these elements may be deduced the following results:—

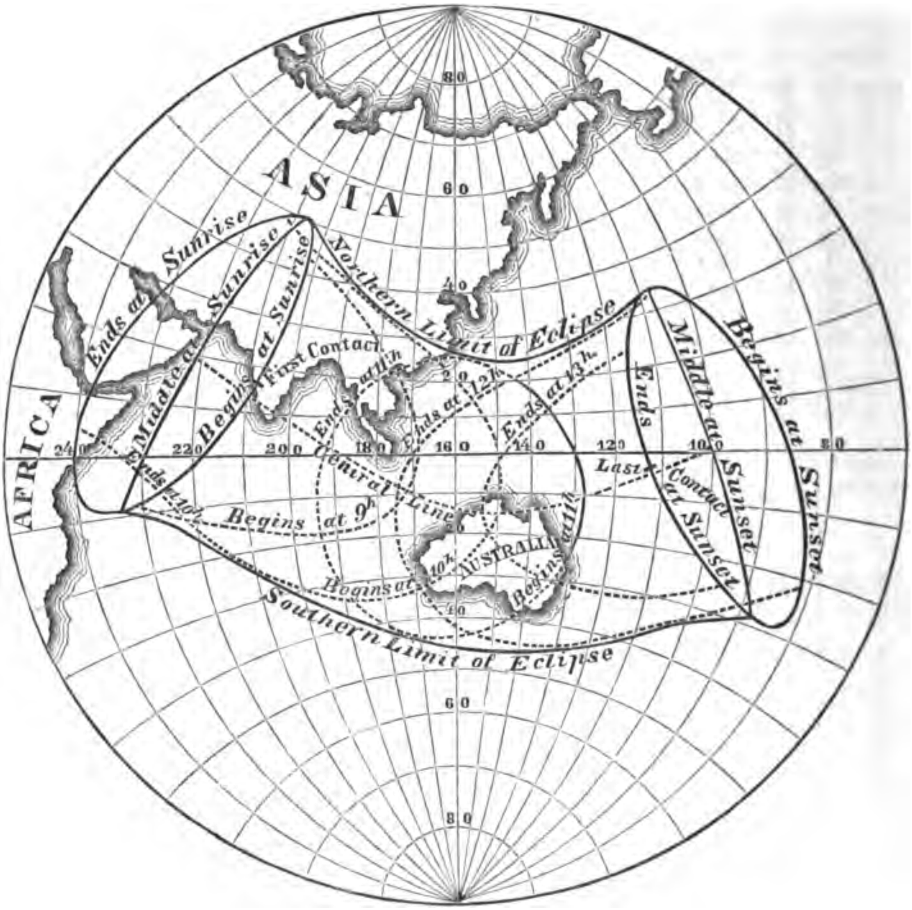
	d h m	
Moon enters Penumbra, July	1 18 4.8	Washington mean time.
Moon enters Shadow	1 19 17.5	" "
Middle of the Eclipse	1 20 19.1	" "
Moon leaves Shadow	1 21 20.7	" "
Moon leaves Penumbra	1 22 33.4	" "

First contact of Shadow with Moon's limb 37° from north point towards the East, when the Moon is in the zenith in longitude 109° 8′ West from Washington, and in latitude 24° 3′ South.

Last contact of Shadow with Moon's limb 34° from north point towards the West, when the Moon is in the zenith in longitude 138° 37′ West from Washington, and in latitude 24° 4′ South.

Magnitude of Eclipse = 0.349 (Moon's diameter = 1).

OUTLINES AND PATH OF THE PENUMBRA, AND THE CENTRAL LINE OF THE TOTAL ECLIPSE OF DECEMBER 11, 1871.



IV. A Total Eclipse of the Sun, December 11, 1871, invisible at Washington, with the following elements:—

Washington mean time of ☌ in Right Ascension, December $11^{d}\ 10^{h}\ 52^{m}\ 0^{s}.7$.

Sun's and Moon's R. A.	$17^{h}\ 15^{m}\ 19^{s}.43$	Hourly Motions	$11^{s}.03$ and $163^{s}.25$
Sun's Declination	$-23^{\circ}\ 3'\ 31''.2$	Hourly Motion	$-\ 0'\ 11''.7$
Moon's Declination	−22 52 5.2	" "	− 6 26.5
Sun's Equa. Hor. Par.	9.0	True Semidiameter	16 15.1
Moon's Equa. Hor. Par.	60 59.8	" "	16 36.5

From these elements may be deduced the following results:—

Eclipse begins on the Earth, December $11^{d}\ 8^{h}\ 18^{m}.6$, Washington mean time, in longitude 209° 21′.4 West from Washington, and in latitude 15° 43′.1 North.

Central Eclipse begins on the Earth $9^{h}\ 14^{m}.6$, in longitude 221° 44′.7 West from Washington, and in latitude 19° 9′.1 North.

Central Eclipse at Noon $10^{h}\ 52^{m}.0$, in longitude 164° 35′.2 West from Washington, and in latitude 12° 20′.2 South.

Central Eclipse ends on the Earth $12^{h}\ 36^{m}.0$, in longitude 100° 49′.3 West from Washington, and in latitude 0° 33′.3 North.

Eclipse ends on the Earth $13^{h}\ 31^{m}.9$, in longitude 113° 18′.8 West from Washington, and in latitude 2° 54′.7 South.

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
				9.96	9.96	−9.59	−9.58	
h m								° ′ ″
8 10	−1.55394	+1.00534	−0.07400	2983	4739	7608	7912	124 5 36.4
8 20	1.45816	0.98818	0.09122	2981	4737	7617	7921	126 35 34.4
8 30	1.36237	0.97102	0.10842	2980	4736	7626	7930	129 5 32.4
8 40	1.26655	0.95386	0.12564	2978	4734	7635	7939	131 35 30.4
8 50	1.17072	0.93671	0.14283	2977	4732	7644	7948	134 5 28.4
9 0	1.07487	0.91958	0.16002	2975	4731	7653	7957	136 35 26.4
9 10	0.97900	0.90244	0.17720	2973	4729	7662	7966	139 5 24.5
9 20	0.88311	0.88532	0.19438	2972	4728	7670	7975	141 35 22.5
9 30	0.78720	0.86819	0.21155	2970	4726	7679	7984	144 5 20.5
9 40	0.69127	0.85108	0.22872	2968	4724	7688	7993	146 35 18.5
9 50	0.59532	0.83396	0.24588	2967	4723	7697	8003	149 5 16.5
10 0	0.49937	0.81685	0.26303	2965	4721	7706	8012	151 35 14.5
10 10	0.40339	0.79975	0.28017	2963	4720	7715	8021	154 5 12.5
10 20	0.30740	0.78264	0.29730	2962	4718	7723	8030	156 35 10.6
10 30	0.21139	0.76555	0.31443	2960	4716	7732	8039	159 5 8.6
10 40	0.11536	0.74846	0.33154	2958	4715	7741	8048	161 35 6.6
10 50	−0.01931	0.73137	0.34865	2957	4713	7750	8057	164 5 4.6
11 0	+0.07674	0.71429	0.36575	2955	4712	7759	8066	166 35 2.6
11 10	0.17281	0.69722	0.38286	2954	4710	7768	8075	169 5 0.6
11 20	0.26890	0.68016	0.39996	2952	4708	7776	8084	171 34 58.6
11 30	0.36500	0.66310	0.41704	2950	4707	7785	8093	174 4 56.7
11 40	0.46113	0.64606	0.43412	2949	4705	7794	8102	176 34 54.7
11 50	0.55728	0.62901	0.45119	2947	4704	7803	8111	179 4 52.7
12 0	0.65344	0.61196	0.46826	2945	4702	7812	8120	181 34 50.7
12 10	0.74961	0.59493	0.48531	2944	4700	7820	8129	184 4 48.7
12 20	+0.84579	+0.57791	−0.50235	2942	4699	7829	8138	186 34 46.7

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h m				9.96	9.96	−9.59	−9.58	° ′ ″
12 30	+0.94198	+0.56087	−0.51939	2940	4697	7838	8147	189 4 44.7
12 40	1.03819	0.54386	0.53642	2939	4696	7847	8156	191 34 42.8
12 50	1.13440	0.52685	0.55343	2937	4694	7856	8165	194 4 40.8
13 0	1.23062	0.50985	0.57045	2935	4692	7864	8174	196 34 38.8
13 10	1.32686	0.49285	0.58745	2934	4691	7873	8183	199 4 36.8
13 20	1.42312	0.47585	0.60445	2932	4689	7882	8192	201 34 34.8
13 30	1.51939	0.45886	0.62144	2931	4688	7891	8201	204 4 32.8
13 40	+1.61567	+0.44189	−0.63843	2929	4686	7899	8210	206 34 30.9

FOR SHADOW.

Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.
h m			h m		
9 10	+0.35660	+0.36864	11 0	+0.16845	+0.18009
9 20	0.33947	0.35147	11 10	0.15137	0.16299
9 30	0.32234	0.33430	11 20	0.13430	0.14590
9 40	0.30522	0.31714	11 30	0.11725	0.12881
9 50	0.28810	0.29998	11 40	0.10020	0.11174
10 0	0.27099	0.28283	11 50	0.08315	0.09467
10 10	0.25388	0.26570	12 0	0.06610	0.07760
10 20	0.23678	0.24856	12 10	0.04907	0.06055
10 30	0.21969	0.23143	12 20	0.03205	0.04351
10 40	0.20260	0.21432	12 30	+0.01502	0.02646
10 50	+0.18552	+0.19720	12 40	−0.00200	+0.00944

A and μ are given in the Table for Penumbra, and the values of log E, log F, log G, and log H may be obtained from corresponding values for Penumbra, by numerically increasing log E and decreasing log F by 0.000004, and by numerically decreasing log G by 0.000026 and increasing log H by 0.000027.

CHANGES OF THE QUANTITIES IN THE TABLE OF DATA IN UNITS OF THE SIXTH PLACE OF DECIMALS.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A′.	B′.	C′.
h m						
8 0	+9574.2	−1717.1	−1722.6	+159.57	−28.62	−28.71
8 30	9580.3	1715.5	1720.5	159.67	28.59	28.67
9 0	9586.2	1713.9	1718.4	159.77	28.56	28.64
9 30	9591.7	1712.2	1716.3	159.86	28.54	28.60
10 0	9597.1	1710.5	1714.2	159.95	28.51	28.57
10 30	9602.2	1708.8	1712.0	160.04	28.48	28.53
11 0	9607.1	1707.2	1709.9	160.12	28.45	28.50
11 30	9611.7	1705.5	1707.7	160.19	28.42	28.46
12 0	9615.8	1703.7	1705.5	160.26	28.39	28.42
12 30	9619.7	1701.8	1703.2	160.33	28.36	28.39
13 0	9623.5	1700.0	1701.0	160.39	28.33	28.35
13 30	+9627.3	−1698.3	−1698.7	+160.45	−28.30	−28.31

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JANUARY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 987	6	-0.24	-3.9	+12 33.6	1 6 43.1	- 1 36.4	+0.4526	.5153	+.1803	+67	-10
B. A. C. 1240	6	0.04	2.5	17 49.6	2 7 59.1	- 1 5.5	-1.1730	.5260	.1522	-35	-72
B. A. C. 1272	6	-0.02	2.7	16 59.5	11 37.2	+ 2 26.1	+0.2959	.5280	.1472	+57	-14
Rumker 1162	6	+0.03	2.4	18 6.5	18 19.0	+ 8 55.6	+0.0154	.5298	.1381	+40	-28
δ¹ Tauri	4	0.03	2.6	17 14.2	19 2.0	+ 9 37.2	+1.0782	.5316	.1371	+90	+35
δ² Tauri	6	0.04	2.6	17 8.5	19 36.5	+10 10.6	+1.2618	.5319	.1360	+90	+55
B. A. C. 1361	6	+0.04	-2.3	+18 44.6	19 59.5	+10 33.0	-0.4580	.5319	+.1356	+13	-55
δ³ Tauri	5	0.04	2.5	17 37.9	20 17.1	+10 50.0	+0.8125	.5320	.1353	+90	+16
ε Tauri	3½	0.05	2.3	18 53.5	21 47.5	-11 42.4	-0.3801	.5328	.1334	+17	-50
Rumker 1258	6	0.10	2.4	18 28.5	3 4 45.3	- 4 57.7	+0.9696	.5363	.1224	+90	+29
Rumker 1269	6½	0.11	2.3	18 33.7	6 19.6	- 3 26.4	+1.0641	.5370	.1201	+90	+36
B. A. C. 1468	6	0.11	2.4	18 29.9	6 25.0	- 3 21.1	+1.1450	.5373	.1197	+90	+43
i Tauri	5½	+0.12	-2.4	+18 37.0	8 52.5	- 0 58.3	+1.3029	.5383	+.1159	+90	+68
ι Tauri	5	0.16	2.0	21 24.2	14 25.6	+ 4 24.1	-1.1545	.5411	.1064	-35	-69
B. A. C. 1563	6½	0.16	2.2	19 37.5	15 38.5	+ 5 34.7	+0.9350	.5417	.1045	+90	+27
l Tauri	5½	0.17	2.1	20 14.7	16 42.6	+ 6 36.7	+0.3622	.5422	.1027	+62	- 6
105 Tauri	6	0.16	1.9	21 31.9	16 43.7	+ 6 37.8	-1.0561	.5422	.1027	-26	-69
κ Tauri	6	0.20	1.9	21 57.7	22 5.4	+11 49.0	-1.0018	.5449	.0936	-21	-68
ο Tauri	6	+0.22	-1.9	+21 49.4	4 2 1.3	- 8 22.8	-0.4966	.5465	+.0863	+11	-53
ζ Tauri	3½	0.24	2.0	21 3.7	6 43.0	- 3 50.3	+0.7271	.5488	.0775	+90	+17
141 Tauri	6	0.28	2.0	22 23.7	17 46.8	+ 6 51.3	+0.0029	.5532	.0561	+39	-20
1 Geminorum	5	0.28	2.0	23 16.0	18 52.0	+ 7 54.3	-0.8943	.5537	.0540	-14	-67
2 Geminorum	6½	0.29	1.9	23 38.8	20 5.2	+ 9 5.0	-1.2462	.5540	.0516	-51	-67
B. A. C. 1970	6½	0.29	2.1	22 12.5	21 22.2	+10 19.4	+0.3939	.5546	.0485	+65	+ 2
3 Geminorum	6	+0.29	-2.0	+23 7.8	21 26.1	+10 23.2	-0.6129	.5546	+.0485	+ 4	-59
6 Geminorum	6	0.29	2.0	22 56.0	22 37.0	+11 31.7	-0.3408	.5550	.0463	+20	-39
η Geminorum	3½	0.30	2.1	22 32.4	23 47.9	-11 19.8	+0.1429	.5555	.0439	+48	-11
μ Geminorum	3	0.31	2.1	22 34.6	5 3 27.5	- 7 47.7	+0.2510	.5567	.0362	+55	- 5
d Geminorum	6	0.33	2.3	21 54.6	16 21.2	+ 4 39.5	+1.2703	.5599	.0096	+90	+67
B. A. C. 2238	6	0.33	2.2	23 45.1	16 30.8	+ 4 48.8	-0.7332	.5600	+.0088	- 3	-66
44 Geminorum	6	+0.34	-2.4	+22 49.6	22 28.7	+10 34.3	+0.2764	.5612	-.0053	+56	0
δ Gemi., *mult.*	3½	0.34	2.5	22 13.0	6 5 5.8	- 7 2.4	+0.8770	.5619	.0181	+90	+32
84 Geminorum	6½	0.32	2.6	22 39.9	19 41.9	+ 7 3.0	-0.1073	.5627	.0498	+33	-25
URANUS				21 41.3	20 49.2	+ 8 8.0	+0.8906	.5647	.0526	+90	+30
7 Cancri	6½	0.31	2.7	22 25.8	7 0 30.8	+11 41.9	-0.1180	.5627	.0606	+32	-27
μ¹ Cancri	6	0.31	2.7	+23 0.1	1 35.5	-11 15.7	-0.7984	.5625	.0625	- 8	-67
μ² Cancri	5	+0.31	-2.7	+21 57.3	2 15.7	-10 36.9	+0.2732	.5626	-.0635	+56	- 6
B. A. C. 2788	6½	0.29	2.7	21 9.2	7 52.7	- 5 11.6	+0.7570	.5618	.0778	+90	+19
η Cancri	6	0.27	2.7	20 52.6	13 23.7	+ 0 6.8	+0.6039	.5614	.0856	+83	+ 9
*39 Cancri	6	0.26	2.7	20 27.6	16 42.4	+ 3 19.7	+0.7520	.5608	.0937	+90	+17
*40 Cancri	6	0.26	2.7	20 25.5	16 44.7	+ 3 21.9	+0.7870	.5608	.0937	+90	+19
*ε Cancri	6½	0.26	2.7	19 59.8	16 52.2	+ 3 29.1	+1.2334	.5608	.0939	+90	+55
*42 Cancri	6½	+0.26	-2.7	+20 10.3	16 59.3	+ 3 36.0	+1.0342	.5608	-.0941	+90	+36
*B. A. C. 2925	6½	0.26	2.7	20 2.0	17 5.3	+ 3 41.8	+1.1738	.5608	.0942	+90	+48
γ Cancri	4½	0.25	2.9	21 55.8	18 6.3	+ 4 40.7	-0.9563	.5608	.0962	-18	-68
80 Cancri	6½	0.19	2.6	18 34.3	8 7 2.4	- 6 49.9	+1.2246	.5580	.1212	+90	+51
83 Cancri	6	0.18	2.5	18 15.0	10 13.8	- 3 45.1	+1.1690	.5569	.1271	+90	+45
η Leonis	3½	+0.04	2.4	17 23.4	9 8 20.0	- 6 23.8	-1.1532	.5512	.1641	-32	-73
42 Leonis	6	-0.01	-2.0	+15 37.5	15 4.6	+ 0 7.3	-0.4284	.5493	-.1740	+16	-57
B. A. C. 3579	6	0.03	1.9	15 0.0	18 19.9	+ 3 16.2	-0.3436	.5484	.1784	+20	-52
i Leonis	6	0.05	1.8	14 47.8	19 54.6	+ 4 47.8	-0.4122	.5478	.1806	+17	-57
ω Virginis	6½	0.31	0.1	8 50.8	11 3 13.7	+11 5.5	-0.4059	.5411	.2139	+17	-61
ξ Virginis	5	0.34	-0.1	8 58.5	6 28.6	- 9 45.9	-1.2365	.5408	.2166	-37	-81
ν Virginis	4½	-0.34	+0.4	+ 7 15.1	6 45.7	- 9 29.3	+0.4925	.5408	-.2167	+70	-12

* Cluster of Præsepe.

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JANUARY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Red'ns from 1871.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
π Virginis	4½	-0.41	+ 0.4	+ 7 20.0	11 13 55.6	- 2 33.4	-1.1614	.5400	-.2215	-30	-83
11 Virginis	6	0.45	0.7	6 31.5	18 19.5	+ 1 42.1	-1.3020	.5400	.2229	-45	-84
B. A. C. 4104	6½	0.46	1.2	4 46.4	19 4.9	+ 2 26.0	+0.3425	.5400	.2243	+59	-20
c Virginis	5	0.50	1.5	+ 4 1.9	23 14.9	+ 6 28.0	+0.1697	.5399	.2262	+49	-29
80 Virginis	6	0.88	4.4	- 4 44.2	13 10 44.2	- 7 11.9	+1.0021	.5461	.2297	+86	+17
ξ¹ Libræ	6	1.33	5.7	11 22.2	14 22 22.8	+ 3 14.0	-0.1350	.5627	.2066	+28	-47
ξ² Libræ	6	-1.34	+ 5.5	-10 53.2	23 25.8	+ 4 14.8	-0.8389	.5635	-.2055	-11	-90
18 Libræ, *mult.*	6½	1.35	5.4	10 37.4	15 0 22.3	+ 5 9.3	-1.2978	.5638	.2044	-50	-90
o¹ Libræ	6	1.49	6.4	15 4.8	9 51.2	- 9 42.1	+1.3038	.5696	.1931	+75	+50
o² Libræ	6	1.50	6.2	14 40.2	10 43.2	- 8 52.0	+0.7253	.5703	.1919	+75	+ 1
γ Libræ	4½	1.56	5.8	14 21.4	16 1.6	- 3 45.2	-0.5905	.5737	.1846	+ 1	-80
η Libræ	6	1.61	5.8	15 15.5	19 36.8	- 0 18.0	-0.3352	.5761	.1790	+14	-59
θ Libræ	4½	-1.67	+ 5.8	-16 20.8	23 38.0	+ 3 34.3	+0.0478	.5788	-.1724	+34	-36
49 Libræ	5½	1.70	5.6	16 9.0	16 2 23.3	+ 6 13.3	-0.6162	.5806	.1677	- 2	-83
B. A. C. 5408	6½	1.78	5.7	18 11.9	8 11.5	+11 48.4	+0.4917	.5841	.1576	+59	-12
χ Ophiuchi	6	1.84	5.2	18 9.6	13 12.1	- 7 22.5	-0.3112	.5872	.1480	+12	-58
B. A. C. 5663	6½	2.00	4.9	41 11.9	23 41.8	+ 2 42.7	+1.2897	.5937	.1257	+69	+57
B. A. C. 5700	6½	1.99	4.3	19 20.0	17 1 9.1	+ 4 6.5	-0.7568	.5946	.1227	-15	-90
B. A. C. 5758	6	-2.05	+ 4.4	-21 22.9	4 42.0	+ 7 31.0	+0.8710	.5963	-.1144	+69	+11
ξ Ophiuchi	5	2.10	3.6	20 58.3	10 28.3	-10 56.4	-0.1608	.5994	.1006	+15	-49
B. A. C. 5866	6	2.12	3.5	21 19.1	11 54.6	- 9 33.6	+0.0434	.5999	.0974	+26	-37
B. A. C. 5954	6	2.18	2.9	21 49.9	17 19.9	- 4 21.5	+0.0654	.6020	.0842	+26	-35
58 Ophiuchi	5	2.19	2.6	21 37.0	19 8.5	- 2 37.4	-0.2977	.6028	.0795	+ 6	-58
B. A. C. 6088	6	2.26	1.9	22 46.5	18 2 11.2	+ 4 8.1	+0.3658	.6049	.0612	+41	-19
B. A. C 6161	6	-2.30	+ 1.6	-23 43.4	5 54.6	+ 7 42.4	+1.1064	.6059	-.0511	+67	+32
SATURN				22 34.7	11 11.2	-11 14.0	-0.2720	.6023	.0371	+ 5	-56
24 Sagittarii	6	2.36	+ 0.3	24 7.5	14 20.2	- 8 12.8	+1.1744	.6070	.0286	+66	+40
B. A. C. 6343	6	2.36	0.0	23 36.7	16 6.2	- 6 31.1	+0.6152	.6070	.0237	+56	- 4
26 Sagittarii	6	2.37	- 0.1	23 57.1	17 22.0	- 5 18.5	+0.9275	.6071	.0197	+66	+17
28 Sagittarii	6	2.36	0.6	22 31.4	19 6.2	- 3 38.5	-0.5327	.6071	.0155	-12	-76
30 Sagittarii	6	-2.36	- 0.9	-22 18.4	20 49.2	- 1 59.7	-0.7727	.6071	-.0106	-26	-90
31 Sagittarii	6	2.36	1.0	22 4.2	21 18.9	- 1 31.3	-1.0153	.6071	.0096	-42	-90
ν¹ Sagittarii	5	2.37	1.0	22 54.0	22 4.2	- 0 47.8	-0.1889	.6070	.0073	+ 5	-51
ν² Sagittarii	5	2.37	1.1	22 49.7	22 25.6	- 0 27.3	-0.2630	.6069	.0059	+ 1	-55
B. A. C. 6448	6	2.38	1.1	23 20.0	22 45.8	- 0 8.0	+0.2411	.6069	-.0052	+29	-25
γ Capricorni	3½	2.16	9.6	17 14.8	21 16 8.5	- 9 19.3	-0.8865	.5729	+.1490	-20	-90
δ Capricorni	3	-2.14	-10.0	-16 42.8	19 7.8	- 6 16.5	-0.9826	.5704	+.1541	-26	-90
29 Aqua., *mult.*	6	2.10	10.6	17 35.2	22 1 50.9	+ 0 2.3	+0.9908	.5648	.1649	+73	+19
50 Aquarii	6	1.99	10.9	14 11.1	11 42.2	+ 9 33.1	-0.8412	.5565	.1786	-14	-90
B. A. C. 7835	6½	1.96	11.0	13 34.6	14 13.9	+11 59.6	-1.0198	.5549	.1818	-25	-90
56 Aquarii	6	1.98	11.3	15 14.8	14 20.7	-11 53.8	+0.7403	.5549	.1818	+74	+ 2
74 Aquarii	6	1.86	11.4	12 18.3	23 1 5.9	- 1 30.3	-0.3106	.5461	.1937	+18	-58
ψ¹ Aquarii	4½	-1.75	-11.4	- 9 47.6	11 45.1	+ 8 48.3	-0.8375	.5384	+.2031	-10	-90
ψ² Aquarii	4½	1.74	11.5	9 53.4	12 45.0	+ 9 46.2	-0.5328	.5377	.2038	+ 8	-74
ψ³ Aquarii	5	1.74	11.6	10 19.1	13 15.4	+10 15.7	+0.0227	.5374	.2042	+37	-38
B. A. C. 8214	6½	1.65	11.5	8 10.9	21 21.0	- 5 53.9	-0.5608	.5316	.2095	+ 7	-76
B. A. C. 8274	6½	1.59	11.4	7 6.0	24 3 50.1	+ 0 23.2	-0.3448	.5281	.2128	+20	-60
30 Piscium	5	1.52	11.5	6 44.1	10 35.7	+ 6 56.5	+0.7142	.5243	.2156	+83	- 1
33 Piscium	5	-1.51	-11.5	- 6 26.0	12 18.8	+ 8 36.5	+0.7638	.5235	+.2162	+78	+ 2
B. A. C. 17	6½	1.48	11.4	5 58.1	14 51.0	+11 4.1	+0.8173	.5222	.2169	+84	+ 5
B. A. C. 81	6½	1.40	10.7	2 56.1	22 8.4	- 5 51.6	-0.8498	.5188	.2185	- 8	-90
15 Ceti	6½	1.33	10.2	1 13.0	25 5 12.0	+ 0 59.6	-1.1596	.5159	.2192	-29	-90
20 Ceti	5½	1.25	10.5	- 1 50.9	13 2.4	+ 8 36.4	+1.2422	.5135	.2191	+88	+37
26 Ceti, *mult.*	6½	-1.20	- 9.7	+ 0 40.3	18 44.0	- 9 52.9	-0.2428	.5118	+.2185	+26	-53

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JANUARY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
29 Ceti	6½	-1.18	-9.5	+ 1 18.9	25 20 56.7	- 7 43.0	-0.4593	.5112	+.2182	+15	-67
33 Ceti	6	1.16	9.3	1 45.4	22 19.0	- 6 23.0	-0.6401	.5110	.2180	+ 5	-83
35 Ceti	6½	1.15	9.3	1 47.2	23 22.0	- 5 21.9	-0.4449	.5106	.2177	+15	-66
f Piscium	6	1.12	9.0	2 55.9	26 2 9.9	- 2 38.7	-1.0839	.5102	.2172	-23	-87
ν Piscium	4½	1.00	8.3	4 49.9	14 46.8	+ 9 36.7	-0.4461	.5085	.2129	+15	-66
64 Ceti	6½	0.85	7.0	7 57.8	27 6 46.9	+ 1 9.7	-0.5359	.5087	.2051	+10	-71
ξ^1 Ceti	4½	-0.84	-6.9	+ 8 14.3	7 39.0	+ 2 0.3	-0.6615	.5087	+.2044	+ 3	-81
B. A. C. 741	6½	0.78	6.6	9 7.6	13 46.7	+ 7 57.5	-0.3988	.5093	.2005	+18	-60
ξ Arietis	5½	0.78	6.2	10 1.4	13 56.0	+ 8 6.5	-1.3549	.5094	.2004	-58	-80
B. A. C. 755	6	0.77	6.2	9 58.8	14 58.2	+ 9 7.0	-1.1005	.5096	.1998	-25	-80
B. A. C. 830	6	0.69	6.1	10 11.2	23 19.9	- 6 45.7	+0.3172	.5109	.1935	+58	-19
38 Arietis	5	0.68	5.5	11 54.0	28 0 36.2	- 5 31.6	-1.3317	.5113	.1924	-53	-78
μ Ceti	4	-0.67	-6.3	+ 9 34.0	0 37.3	- 5 30.6	+1.2497	.5113	+.1924	+90	+42
B. A. C. 987	6	0.54	5.1	12 33.4	14 29.7	+ 7 57.8	+0.5325	.5149	.1799	+73	- 6
B. A. C. 1240	6	0.30	2.9	17 49.6	29 15 45.7	+ 8 28.9	-1.0985	.5243	.1513	-28	-72
B. A. C. 1272	6	0.26	3.2	16 59.5	19 24.0	-11 59.4	+0.3672	.5260	.1463	+62	-11
Rumker 1162	6	0.20	2.8	18 6.5	30 2 6.8	- 5 28.9	+0.0847	.5289	.1372	+44	-25
δ^1 Tauri	4	0.19	3.0	17 14.2	2 49.9	- 4 47.2	+1.1458	.5290	.1361	+90	+40
B. A. C. 1361	6	-0.18	-2.6	+18 44.6	3 47.6	- 3 51.2	-0.3888	.5298	+.1347	+17	-51
δ^3 Tauri	5	0.18	2.9	17 37.9	4 5.2	- 3 34.2	+0.8804	.5298	.1344	+90	+20
ε Tauri	3½	0.16	2.5	18 53.5	5 35.9	- 2 6.3	-0.3120	.5308	.1320	+22	-46
Rumker 1258	6	0.10	2.6	18 28.5	12 35.1	+ 4 39.8	+1.0340	.5342	.1210	+90	+32
Rumker 1269	6½	0.08	2.5	18 33.7	14 9.6	+ 6 11.3	+1.1277	.5347	.1192	+90	+40
B. A. C. 1468	6	-0.08	2.5	18 29.9	14 15.0	+ 6 16.6	+1.0242	.5353	.1190	+90	+32
ι Tauri	5	0.00	-1.7	+21 24.2	22 17.2	- 9 56.5	-1.0932	.5386	+.1062	-29	-69
B. A. C. 1563	6½	+0.01	2.2	19 37.5	23 30.4	- 8 45.6	+0.9943	.5394	.1037	+90	+32
l Tauri	5½	0.02	2.0	20 14.7	31 0 34.7	- 7 43.5	+0.4214	.5399	.1017	+67	- 3
105 Tauri	6	0.02	1.7	21 32.0	0 35.7	- 7 42.3	-0.9959	.5399	.1017	-21	-69
κ Tauri	6	0.07	1.5	21 57.7	5 58.5	- 2 30.1	-0.9443	.5425	.0925	-17	-68
ο Tauri	6	0.10	1.6	21 49.5	9 55.1	+ 1 18.8	-0.4417	.5444	.0854	+14	-49
ζ Tauri	3½	+0.15	-1.8	+21 3.7	14 37.5	+ 5 51.9	+0.7780	.5466	+.0766	+90	+20
FEBRUARY.											
141 Tauri	6	+0.24	-1.5	+22 23.7	1 1 42.7	- 7 25.1	+0.0478	.5516	+.0553	+42	-18
1 Geminorum	5	0.25	1.3	23 16.0	2 48.0	- 6 22.0	-0.8488	.5519	.0531	-11	-67
2 Geminorum	6½	0.26	1.3	23 38.8	4 1.3	- 5 11.2	-1.2006	.5523	.0509	-43	-67
B. A. C. 1970	6½	0.27	1.6	22 12.5	5 18.3	- 3 56.8	+0.4360	.5528	.0486	+68	- 4
3 Geminorum	6	0.27	1.4	23 7.9	5 22.3	- 3 52.9	-0.5696	.5532	.0478	+ 7	-55
6 Geminorum	6	+0.28	-1.5	+22 56.0	6 33.2	- 2 44.4	-0.2984	.5535	+.0454	+22	-36
η Geminorum	3½	0.29	1.6	22 32.5	7 44.2	- 1 35.8	+0.1837	.5540	.0431	+51	- 9
μ Geminorum	3	0.32	1.6	22 34.6	11 23.8	+ 1 56.3	+0.2889	.5555	.0354	+57	- 3
B. A. C. 2238	6	0.41	1.6	23 45.1	2 0 26.4	- 9 28.0	-0.7023	.5596	+.0079	- 1	-63
44 Geminor.	6	0.45	1.8	22 49.6	6 23.3	- 3 43.4	+0.3112	.5612	-.0050	+59	- 2
δ Gemi., *mult.*	3½	+0.49	-2.1	+22 13.0	12 58.8	+ 2 38.3	+0.8927	.5626	-.0190	+90	+33
URANUS				21 53.8	3 2 26.5	- 8 22.4	+0.7789	.5662	.0489	+90	+23
84 Geminor.	6½	0.56	2.4	22 39.9	3 29.5	- 7 21.6	-0.1010	.5645	.0508	+33	-25
7 Geminorum	6½	0.57	2.5	22 25.9	8 15.8	- 2 45.3	-0.1161	.5648	.0610	+33	-27
μ^1 Cancri	6	0.58	2.5	23 0.1	9 20.0	- 1 43.4	-0.7940	.5648	.0633	- 7	-67
μ^2 Cancri	5	+0.58	-2.6	+21 57.3	9 59.9	- 1 4.9	+0.2845	.5648	-.0649	+57	- 6
B. A. C. 2788	6½	0.59	2.8	21 9.2	15 33.4	+ 4 16.9	+0.7473	.5648	.0771	+90	+19
η Cancri	6	0.61	3.0	20 52.6	21 0.8	+ 9 32.6	+0.5905	.5646	.0883	+82	+ 8
*39 Cancri	6	0.61	3.1	20 27.6	4 0 17.1	-11 17.9	+0.7332	.5644	.0949	+90	+16
*40 Cancri	6	0.61	3.1	20 25.5	0 19.4	-11 15.7	+0.7679	.5644	.0950	+90	+18
*ε Cancri	6½	+0.61	-3.1	+19 59.8	0 26.7	-11 8.7	+1.9112	.5644	-.0957	+90	+52

* Cluster of Præsepe.

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

FEBRUARY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
*42 Cancri	6½	+0.61	-3.1	+20 10.3	4 0 33.8	-11 1.8	+1.0132	.5644	-.0959	+90	+34
*B. A. C. 2925	6½	0.61	3.2	20 2.0	0 39.7	-10 56.1	+1.1519	.5644	.0961	+90	+46
γ Cancri	4½	0.62	3.1	21 55.8	1 39.9	- 9 58.0	-0.9658	.5644	.0981	-18	-68
80 Cancri	6½	0.62	3.6	18 34.2	14 25.1	+ 2 20.4	+1.1863	.5625	.1237	+90	+46
83 Cancri	6	0.62	3.6	18 14.9	17 33.6	+ 5 22.3	+1.1280	.5618	.1296	+90	+40
η Leonis	3½	0.59	4.1	17 23.4	5 15 11.7	+ 2 15.5	-1.1998	.5571	.1669	-37	-73
37 Leonis	6	+0.58	-4.0	+14 22.2	19 33.6	+ 6 28.6	+1.2170	.5560	-.1738	+90	+43
42 Leonis	6	0.57	4.1	15 37.5	21 53.6	+ 8 43.9	-0.4885	.5554	.1771	+12	-61
B. A. C. 3579	6	0.56	4.2	15 0.0	6 1 5.2	+11 49.0	-0.4079	.5546	.1816	+17	-57
i Leonis	6	0.55	4.2	14 47.8	2 38.1	-10 41.2	-0.4779	.5541	.1839	+13	-62
ω Virginis	6½	0.40	3.8	8 50.8	7 9 21.2	- 4 59.5	-0.5069	.5474	.2173	+12	-68
ξ Virginis	5	0.38	3.9	8 58.4	12 32.7	- 1 54.3	-1.3335	.5466	.2199	-51	-81
ν Virginis	4½	+0.38	-3.6	+ 7 15.1	12 49.5	- 1 38.1	+0.3830	.5466	-.2199	+62	-17
π Virginis	4½	0.33	3.7	7 19.9	19 52.0	+ 5 10.5	-1.2668	.5458	.2247	-40	-83
B. A. C. 4104	6½	0.29	3.1	4 46.3	8 0 56.4	+10 4.9	+0.2230	.5454	.2275	+52	-26
c Virginis	5	+0.26	3.0	+ 4 1.8	5 2.7	- 9 56.8	+0.0476	.5449	.2292	+42	-36
80 Virginis	6	-0.05	-0.7	- 4 44.3	9 16 12.2	+ 0 3.4	+0.8570	.5474	.2307	+86	+ 8
94 Virginis	6	0.19	+0.3	8 16.5	10 6 21.2	-10 15.9	+1.2340	.5509	.2242	+82	+37
ξ¹ Libræ	6	-0.44	+1.1	-11 22.2	11 3 58.8	+10 37.3	-0.2859	.5595	-.2056	+20	-56
ξ² Libræ	6	0.46	0.9	10 53.3	5 2.6	+11 38.9	-0.9936	.5599	.2042	-21	-90
o¹ Libræ	6	0.60	2.1	15 4.8	15 36.4	- 2 9.6	+1.1663	.5648	.1913	+75	+32
o² Libræ	6	0.61	1.9	14 40.3	16 29.2	- 1 18.6	+0.5797	.5655	.1900	+69	- 8
γ Libræ	4½	0.67	1.7	14 21.4	21 53.0	+ 3 53.6	-0.7410	.5682	.1825	- 7	-90
η Libræ	6	0.72	1.9	15 15.6	12 1 32.1	+ 7 24.8	-0.4824	.5702	.1768	+ 6	-70
θ Libræ	4½	-0.78	+2.1	-16 20.9	5 39.1	+11 22.8	-0.0940	.5723	-.1702	+26	-44
49 Libræ	5½	0.82	1.9	16 9.0	8 26.8	- 9 55.7	-0.7633	.5738	.1654	-10	-90
B. A. C. 5408	6½	0.90	2.4	18 11.9	14 22.9	- 4 12.7	+0.3593	.5769	.1547	+50	-19
χ Ophiuchi	6	0.97	2.1	18 9.6	19 30.6	+ 0 43.5	-0.4494	.5796	.1451	+ 5	-68
B. A. C. 5663	6½	1.13	2.2	20 12.0	13 6 16.7	+11 5.1	+0.1670	.5848	.1235	+36	-30
B. A. C. 5700	6½	1.14	1.8	19 20.0	7 46.4	-11 28.7	-0.8921	.5856	.1199	-24	-90
B. A. C. 5758	6	-1.20	+2.3	-21 22.9	11 25.2	- 7 58.3	+0.7596	.5871	-.1117	+69	+ 4
ξ Ophiuchi	5	1.28	1.7	20 58.3	17 21.4	- 2 15.9	-0.2808	.5903	.0987	+ 9	-57
B. A. C. 5866	6	1.30	1.7	21 19.1	18 50.3	- 0 50.5	-0.0728	.5903	.0949	+19	-43
B. A. C. 5954	6	1.38	1.5	21 49.9	14 0 25.5	+ 4 31.7	-0.0457	.5922	.0813	+20	-42
58 Ophiuchi	5	1.40	1.2	21 37.0	2 16.9	+ 6 18.7	-0.4112	.5928	.0773	0	-66
B. A. C. 6088	6	1.49	0.9	22 46.5	9 32.5	-10 42.9	+0.2685	.5948	.0587	+35	-24
B. A. C. 6161	6	-1.55	+0.9	-23 43.4	13 22.6	- 7 1.9	+1.0238	.5957	-.0489	+66	+24
24 Sagittarii	6	1.65	+0.1	24 7.5	22 3.6	+ 1 18.3	+1.1015	.5969	.0268	+66	+31
SATURN				22 28.5	23 32.7	+ 2 43.9	-0.6107	.5976	.0227	-16	-85
B. A. C. 6343	6	1.66	-0.2	23 36.7	23 52.7	+ 3 3.1	+0.5373	.5973	.0220	+50	- 9
26 Sagittarii	6	1.68	0.2	23 57.1	15 1 10.8	+ 4 18.0	+0.8553	.5972	.0188	+66	+11
28 Sagittarii	6	1.68	0.8	22 31.4	2 58.1	+ 6 1.1	-0.6230	.5972	.0139	-17	-87
30 Sagittarii	6	-1.70	-1.0	-22 18.4	4 44.2	+ 7 42.9	-0.8638	.5972	-.0091	-32	-90
31 Sagittarii	6	1.70	1.1	22 4.2	5 14.8	+ 8 12.3	-1.1089	.5972	.0081	-51	-90
ν¹ Sagittarii	5	1.72	1.0	22 54.1	6 1.4	+ 8 57.0	-0.2705	.5973	.0059	+ 1	-57
ν² Sagittarii	5	1.72	1.1	22 49.9	6 23.5	+ 9 18.3	-0.3455	.5972	.0040	- 3	-61
B. A. C. 6448	6	1.73	1.0	23 20.0	6 44.2	+ 9 38.2	+0.1661	.5972	-.0039	+24	-30
B. A. C. 6485	6½	1.74	1.3	22 52.4	8 56.7	+11 45.4	-0.3043	.5972	+.0019	- 1	-58
υ Sagittarii	4	-1.75	-1.7	-21 55.7	10 9.5	-11 4.7	-1.2618	.5972	+.0044	-66	-90
B. A. C. 6524	6½	1.76	1.6	22 41.6	11 2.6	-10 13.7	-0.4776	.5969	.0075	-10	-72
B. A. C. 6607	6	1.80	2.2	22 38.5	16 24.6	- 5 4.6	-0.4535	.5964	.0218	- 8	-69
χ³ Sagittarii	6	1.84	2.0	24 12.8	18 17.4	- 3 16.2	+1.1904	.5961	.0255	+66	+42
50 Sagittarii	6	1.81	2.6	22 2.1	18 39.6	- 2 54.9	-1.0172	.5958	.0277	-41	-90
B. A. C. 6699	6½	-1.86	-2.6	-23 35.3	22 18.4	+ 0 35.2	+0.6820	.5953	+.0362	+63	0

* Cluster of Præsepe.

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

FEBRUARY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'us from 1871.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	"	° ′	d h m	h m				°	°
B. A. C. 6727	6½	-1.87	-2.8	-23 43.2	16 0 4.4	+ 2 17.1	+0.8853	.5947	+.0411	+67	+13
B. A. C. 6864	6	1.92	3.9	23 5.4	8 33.0	+10 25.7	+0.6831	.5921	.0626	+64	0
B. A. C. 6878	6½	1.92	4.0	22 57.4	9 29.4	+11 19.8	+0.6055	.5916	.0647	+58	- 5
B. A. C. 6889	6	1.91	4.3	21 40.6	10 0.2	+11 49.5	-0.6677	.5914	.0659	-15	-90
4 Capricorni	6	1.94	4.8	22 12.4	15 14.7	- 7 8.3	+0.2535	.5895	.0784	+36	-25
B. A. C. 7049	6	1.97	5.2	22 49.1	19 53.6	- 2 40.0	+1.2709	.5872	.0895	+67	+55
17 Capricorni	6	-1.98	- 6.1	-21 59.0	17 2 43.5	+ 3 54.2	+1.0812	.5837	+.1050	+68	+28
20 Capricorni	6	1.97	6.9	19 32.2	8 20.1	+ 9 18.2	-0.8285	.5806	.1166	-20	-90
η Capricorni	5½	1.98	7.0	20 21.9	10 19.6	+11 13.2	+0.2798	.5794	.1208	+42	-24
B. A. C. 8214	6½	1.75	11.6	8 10.9	20 6 54.3	+ 5 27.4	-0.4475	.5346	.2120	+14	-67
B. A. C. 8274	6½	1.72	11.6	7 6.0	13 20.0	+11 41.0	-0.2207	.5313	.2155	+26	-52
30 Piscium	5	1.68	11.7	6 44.1	20 2.3	- 5 48.9	+0.8464	.5277	.2184	+83	+ 7
33 Piscium	5	-1.67	-11.7	- 6 26.0	21 44.6	- 4 9.7	+0.8989	.5269	+.2191	+84	+10
B. A. C. 17	6½	1.66	11.7	5 58 1	21 0 15.4	- 1 43.5	+0.7779	.5258	.2198	+74	+ 3
B. A. C. 81	6½	1.61	11.3	2 56.1	7 28.3	+ 5 16.4	-0.6955	.5228	.2215	+ 1	-89
14 Ceti	6½	1.57	11.1	1 13.1	13 8.1	+10 46.1	-1.2844	.5207	.2222	-42	-90
15 Ceti	6½	1.56	11.1	- 1 13.0	14 27.2	-11 57.2	-0.9938	.5201	.2222	-17	-90
26 Ceti, *mult.*	6½	1.47	10.7	+ 0 40.3	22 3 49.5	+ 1 1.6	-0.0622	.5161	.2215	+36	-43
29 Ceti	6½	-1.46	-10.6	+ 1 18.9	6 0.5	+ 3 8.8	-0.2750	.5155	+.2211	+25	-55
33 Ceti	6	1.45	10.4	1 45.4	7 21.7	+ 4 27.6	-0.4533	.5152	.2209	+15	-67
35 Ceti	6½	1.44	10.4	1 47.2	8 24.0	+ 5 28.1	-0.2577	.5150	.2206	+26	-54
f Piscium	6	1.42	10.1	2 55.9	11 9.7	+ 8 9.1	-0.8910	.5145	.2200	-10	-87
ν Piscium	4½	1.34	9.5	4 49.8	23 37.0	- 3 45.2	-0.2429	.5127	.2156	+26	-52
64 Ceti	6½	-1.22	- 8.4	+ 7 57.8	23 15 25.7	+11 36.3	-0.3196	.5122	+.2071	+22	-56
ξ^1 Ceti	4½	1.21	8.3	8 14.3	16 17.1	-11 33.8	-0.4438	.5123	.2067	+16	-64
B. A. C. 741	6½	1.17	7.9	9 7.6	22 20.9	- 5 40.4	-0.1784	.5124	.2025	+30	-47
ξ Arietis	5½	1.17	7.6	10 1.3	22 30.1	- 5 31.5	-1.1308	.5125	.2023	-27	-80
B. A. C. 755	6	1.16	7.6	9 58.8	23 31.6	- 4 31.7	-0.8766	.5127	.2015	- 9	-80
B. A. C. 830	6	-1.09	- 7.3	+10 11.2	24 7 48.5	+ 3 30.8	+0.5370	.5136	+.1950	+74	- 8
38 Arietis	5	1.09	6.7	11 54.0	9 4.1	+ 4 44.2	-1.1028	.5138	.1940	-25	-78
B. A. C. 987	6	0.95	6.1	12 33.4	23 51.3	- 4 52.6	+0.7600	.5165	.1809	+90	+ 7
B. A. C. 1240	6	0.74	3.7	17 49.6	26 0 1.8	- 5 27.2	-0.8700	.5238	.1512	-11	-72
B. A. C. 1272	6	0.70	3.9	16 59.5	3 40.0	- 1 55.6	+0.5943	.5253	.1462	+81	+ 2
Rumker 1162	6	-0.63	- 3.3	+18 6.5	10 23.0	+ 4 35.2	+0.3098	.5281	+.1365	+58	-13
B. A. C. 1361	6	0.62	3.1	18 44.6	12 3.9	+ 6 12.9	-0.1645	.5284	.1343	+29	-38
δ^3 Tauri	5	0.61	3.4	17 37.8	12 21.5	+ 6 30.0	+1.1054	.5286	.1340	+90	+36
ε Tauri	3½	0.60	3.0	18 53.5	13 52.3	+ 7 57.9	-0.0884	.5292	.1315	+34	-33
Rumker 1258	6	0.52	3.0	18 28.5	20 52.5	- 9 15.0	+1.2552	.5321	.1206	+90	+54
ι Tauri	5	-0.42	- 1.7	+21 24.2	27 6 36.9	+ 0 10.9	-0.8798	.5365	+.1047	-12	-69
B. A. C. 1563	6½	0.41	2.3	19 37.5	7 50.5	+ 1 22.2	+1.2092	.5368	.1027	+90	+51
l Tauri	5½	0.40	2.1	20 14.7	8 55.1	+ 2 24.7	+0.6353	.5372	.1009	+87	+ 9
105 Tauri	6	0.40	1.6	21 32.0	8 56.2	+ 2 25.8	-0.7841	.5372	.1008	- 6	-69
κ Tauri	6	0.34	1.4	21 57.7	14 20.8	+ 7 40.0	-0.7365	.5395	.0916	- 3	-67
ο Tauri	6	-0.29	- 1.4	+21 49.4	18 18.8	+11 30.3	-0.2363	.5410	+.0845	+26	-36
ζ Tauri	3½	0.24	1.5	21 3.7	23 3.1	- 7 54.6	+0.9822	.5431	.0756	+90	+34
141 Tauri	6	0.12	1.0	22 23.7	28 10 13.2	+ 2 53.3	+0.2400	.5475	.0542	+54	- 7
1 Geminorum	5	0.10	0.7	23 16.0	11 19.1	+ 3 57.0	-0.6598	.5480	.0521	+ 2	-62
2 Geminorum	6½	0.09	0.6	23 38.8	12 32.9	+ 5 8.4	-1.0137	.5487	.0493	-23	-67
B. A. C. 1970	6½	-0.08	- 1.0	+22 12.5	13 50.6	+ 6 23.4	+0.6256	.5492	+.0469	+87	+14
3 Geminorum	6	0.08	0.7	23 7.9	13 54.6	+ 6 27.3	-0.3822	.5492	.0468	+18	-42
6 Geminorum	6	0.06	0.8	22 56.1	15 6.1	+ 7 36.4	-0.1119	.5495	.0444	+33	-25
η Geminorum	3½	0.05	0.9	22 32.5	16 17.6	+ 8 45.5	+0.3700	.5499	.0422	+63	+ 1
μ Geminorum	3	-0.01	- 0.9	+22 34.6	19 59.2	-11 40.4	+0.4718	.5513	+.0345	+71	+ 7

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

MARCH.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 2238	6	+0.14	− 0.5	+23 45.1	1 9 8.3	+ 1 1.8	−0.5370	.5556	+.0071	+ 9	−49
ω Geminorum	6	0.19	0.3	24 23.8	13 47.8	+ 5 31.7	−1.2280	.5569	−.0031	−48	−66
44 Geminor.	6	0.20	0.8	22 49.7	15 8.1	+ 6 49.3	+0.4709	.5572	.0057	+71	+10
48 Geminor.	6	0.24	0.4	24 20.5	18 17.5	+ 9 52.2	−1.2020	.5581	.0124	−44	−66
δ Gemi., *mult.*	3½	0.24	1.1	22 13.0	21 46.7	−10 45.9	+1.0442	.5587	.0203	+90	+44
URANUS				22 2.6	2 9 39.0	+ 0 41.5	+0.8323	.5619	.0463	+90	+27
84 Geminor.	6½	+0.41	− 1.2	+22 40.0	12 23.1	+ 3 19.9	+0.0277	.5613	−.0523	+41	−18
7 Cancri	6½	0.45	1.3	22 25.9	17 11.1	+ 7 57.9	+0.0052	.5618	.0623	+39	−20
μ¹ Cancri	6	0.46	1.2	23 0.1	18 15.5	+ 8 59.9	−0.6745	.5618	.0646	+ 1	−58
μ² Cancri	5	0.47	1.5	21 57.3	18 55.6	+ 9 38.7	+0.4032	.5619	.0662	+65	0
B. A. C. 2788	6½	0.50	1.8	21 9.2	3 0 30.5	− 8 58.1	+0.8564	.5622	.0782	+90	+25
η Cancri	6	0.55	2.0	20 52.6	5 58.9	− 3 41.3	+0.6896	.5625	.0897	+90	+14
*39 Cancri	6	+0.58	− 2.2	+20 27.6	9 15.5	− 0 31.5	+0.8264	.5626	−.0964	+90	+21
*40 Cancri	6	0.58	2.2	20 25.5	9 17.8	− 0 29.3	+0.8614	.5626	.0965	+90	+24
*42 Cancri	6½	0.58	2.2	20 10.4	9 32.3	− 0 15.3	+1.1061	.5626	.0974	+90	+41
*B. A. C. 2925	6½	0.58	2.3	20 2.0	9 38.2	− 0 9.6	+1.2445	.5626	.0976	+90	+56
γ Cancri	4½	0.59	1.9	21 55.8	10 38.5	+ 0 48.6	−0.8726	.5623	.0996	−12	−68
80 Cancri	6½	0.66	2.9	18 34.3	23 23.4	−10 53.4	+1.2517	.5618	.1255	+90	+54
83 Cancri	6	+0.68	− 3.0	+18 15.0	4 2 30.4	− 7 52.9	+1.1869	.5616	−.1314	+90	+45
η Leonis	3½	0.77	3.8	17 23.4	5 0 6.9	−11 1.3	−1.1749	.5590	.1697	−34	73
37 Leonis	6	0.78	4.3	14 22.1	4 21.2	− 6 55.8	+1.2354	.5583	.1764	+90	+45
42 Leonis	6	0.79	4.2	15 37.5	6 39.8	− 4 42.0	−0.4816	.5578	.1802	+13	−61
B. A. C. 3579	6	0.79	4.4	15 0.0	9 49.1	− 1 39.1	−0.4082	.5573	.1848	+17	−57
i Leonis	6	0.80	4.4	14 47.7	11 20.9	− 0 10.5	−0.4812	.5572	.1869	+13	−61
ω Virginis	6½	+0.80	− 5.3	+ 8 50.8	6 17 33.1	+ 5 0.1	−0.5750	.5530	−.2220	+ 9	73
ν Virginis	4½	0.79	5.4	7 15.0	20 57.0	+ 8 17.2	+0.2964	.5527	.2247	+57	−22
B. A. C. 3996	6	0.78	5.3	5 54.6	22 26.9	+ 9 44.1	+1.3271	.5526	.2259	+90	+50
π Virginis	4½	0.78	5.5	7 19.9	7 3 50.0	− 9 3.7	−1.3505	.5522	.2296	−53	−83
B. A. C. 4104	6½	0.76	5.4	4 46.2	8 47.6	− 4 16.1	+0.1116	.5522	.2325	+46	−33
c Virginis	5	0.75	5.4	+ 4 1.8	12 47.9	− 0 23.9	−0.0705	.5521	.2344	+36	−43
80 Virginis	6	+0.59	− 4.3	− 4 44.4	8 23 3.4	+ 8 42.2	+0.6640	.5553	−.2358	+84	− 4
94 Virginis	6	0.50	3.4	8 16.6	9 12 50.9	− 1 58.8	+1.0174	.5591	.2288	+82	+18
ξ¹ Libræ	6	0.32	2.5	11 22.3	10 9 59.2	− 5 34.8	−0.5105	.5655	.2088	+ 9	−72
ξ² Libræ	6	0.31	2.7	10 53.3	11 1.6	− 4 34.7	−1.2128	.5657	.2076	−39	−90
o¹ Libræ	6	0.21	1.4	15 4.9	21 23.7	+ 5 25.1	+0.9226	.5702	.1936	+75	+13
o² Libræ	6	0.20	1.5	14 40.3	22 15.6	+ 6 15.2	+0.3436	.5703	.1927	+53	−21
ζ³ Libræ	6	+0.17	− 1.1	−16 9.9	11 1 29.1	+ 9 21.6	+1.2337	.5717	−.1875	+74	+40
ζ⁴ Libræ	6	0.16	1.0	16 24.8	2 26.1	+10 16.5	+1.3053	.5720	.1861	+74	+51
γ Libræ	4½	0.14	1.0	14 21.4	3 34.2	+11 22.1	−0.9750	.5727	.1843	−22	−90
η Libræ	6	0.10	1.4	15 15.6	7 10.2	− 9 9.8	−0.7200	.5741	.1788	− 7	−90
θ Libræ	4½	0.06	1.0	16 20.9	11 13.9	− 5 15.1	−0.3347	.5754	.1717	+14	−61
49 Libræ	5½	+0.03	1.1	16 9.1	13 59.7	− 2 35.5	−1.0018	.5766	.1668	−27	−90
ν¹ Scorpii	7	−0.03	− 0.1	−19 6.8	18 44.2	+ 1 58.4	+1.2148	.5786	−.1580	+71	+40
ν² Scorpii	4	0.03	0.1	19 7.4	18 44.6	+ 1 58.8	+1.2232	.5786	.1580	+71	+41
B. A. C. 5408	6½	0.05	0.4	18 12.0	19 52.1	+ 3 3.9	+0.1151	.5792	.1556	+36	−33
ψ Ophiuchi	5	0.10	0.0	19 44.0	23 43.4	+ 6 46.4	+1.0767	.5808	.1482	+71	+26
χ Ophiuchi	6	0.11	− 0.4	18 9.7	12 0 57.3	+ 7 57.6	−0.6910	.5812	.1459	− 9	−90
B. A. C. 5663	6¼	0.25	+ 0.1	20 12.0	11 40.1	− 5 44.1	−0.0747	.5851	.1231	+22	−44
B. A. C. 5700	6½	−0.27	− 0.3	−19 20.0	13 9.6	− 4 18.1	−1.1327	.5855	−.1201	−42	−90
B. A. C. 5758	6	0.32	+ 0.4	21 22.9	16 48.0	− 0 48.1	+0.5195	.5867	.1116	+56	−10
ξ Ophiuchi	5	0.40	0.1	20 58.3	22 44.3	+ 4 54.3	−0.5188	.5883	.0978	− 4	−75
B. A. C. 5866	6	0.42	0.2	21 19.1	13 0 13.4	+ 6 20.0	−0.3097	.5887	.0947	+ 7	−59
B. A. C. 5954	6	0.50	0.2	21 49.9	5 49.3	+11 42.8	−0.2792	.5901	.0807	+ 7	−57
58 Ophiuchi	5	−0.53	+ 0.1	−21 37.0	7 41.7	−10 29.2	−0.6451	.5905	−.0760	−13	−89

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

MARCH.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Red'ns from 1871.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
4 Sagittarii	5	-0.62	+ 0.6	-23 48.1	13 14 8.3	- 4 17.7	+1.1363	.5911	-.0603	+66	+34
B. A. C. 6088	6	0.63	0.2	22 46.5	15 0.0	- 3 28.1	+0.0416	.5914	.0580	+22	-37
B. A. C. 6161	6	0.69	0.4	23 43.4	18 52.1	+ 0 14.9	+0.8030	.5917	.0481	+67	+ 8
24 Sagittarii	6	0.81	+ 0.1	24 7.5	14 3 38.7	+ 8 40.8	+0.8908	.5920	.0254	+66	+14
B. A. C. 6343	6	0.83	- 0.1	23 36.7	5 29.2	+10 26.9	+0.3245	.5920	.0199	+36	-21
26 Sagittarii	6	0.85	0.1	23 57.1	6 48.3	+11 42.9	+0.6459	.5920	.0174	+58	- 2
Saturn				-22 21.4	8 35.5	-10 34.1	-1.0104	.5895	-.0128	-42	-90
28 Sagittarii	6	-0.86	- 0.6	22 31.4	8 37.1	-10 32.6	-0.8395	.5917	.0125	-30	-90
30 Sagittarii	6	0.89	0.8	22 18.4	10 24.6	- 8 49.3	-1.0797	.5914	.0077	-47	-90
ν¹ Sagittarii	5	0.91	0.7	22 54.1	11 43.0	- 7 34.0	-0.4816	.5914	.0046	-11	-72
ν² Sagittarii	5	0.91	0.7	22 49.8	12 5.4	- 7 12.5	-0.5565	.5914	.0038	-14	-79
B. A. C. 6448	6	0.92	0.6	23 20.0	12 26.5	- 6 52.2	-0.0413	.5913	-.0025	+13	-42
B. A. C. 6485	6½	-0.94	- 0.8	-22 52.4	14 40.9	- 4 43.0	-0.5125	.5912	+.0031	-12	-75
B. A. C. 6524	6½	0.97	1.0	22 41.6	16 48.8	- 2 40.2	-0.6849	.5906	.0085	-21	-90
B. A. C. 6576	6	1.02	0.6	24 23.9	20 11.5	+ 0 34.6	+1.1061	.5901	.0169	+66	+32
B. A. C. 6607	6	1.04	1.4	22 38.5	22 16.3	+ 2 34.6	-0.6543	.5897	.0222	-18	-90
χ³ Sagittarii	6	1.07	0.9	24 12.7	15 0 11.1	+ 4 24.9	+1.0046	.5891	.0269	+66	+22
50 Sagittarii	6	1.06	1.7	22 2.1	0 33.7	+ 4 46.6	-1.2196	.5890	.0285	-59	-90
B. A. C. 6699	6½	-1.11	- 1.4	-23 35.3	4 16.6	+ 8 20.8	+0.4978	.5880	+.0373	+48	-11
B. A. C. 6727	6½	1.14	1.5	23 43.2	6 4.6	+10 4.7	+0.7052	.5874	.0419	+65	+ 1
B. A. C. 6864	6	1.23	2.3	23 5.4	14 43.6	- 5 36.2	+0.5136	.5843	.0633	+51	-10
B. A. C. 6878	6½	1.24	2.4	22 57.3	15 41.1	- 4 41.0	+0.4367	.5839	.0656	+46	-14
B. A. C. 6889	6	1.23	2.8	21 40.6	16 12.6	- 4 10.7	-0.8472	.5839	.0665	-26	-90
4 Capricorni	6	1.29	3.0	22 12.4	21 33.8	+ 0 58.3	+0.0906	.5814	.0795	+27	-34
B. A. C. 7049	6	-1.34	- 3.1	-22 49.1	16 2 18.9	+ 5 32.7	+1.1254	.5793	+.0899	+67	+32
17 Capricorni	6	1.39	3.9	21 58.9	9 18.1	-11 43.7	+0.9454	.5758	.1051	+68	+17
20 Capricorni	6	1.42	4.9	19 32.2	15 2.5	- 6 11.9	-0.9532	.5727	.1172	-28	-90
η Capricorni	5½	1.44	4.8	20 21.9	17 4.8	- 4 14.1	+0.1505	.5714	.1212	+35	-31
27 Capricorni	6	1.47	4.8	21 4.4	19 16.0	- 2 7.5	+1.1580	.5703	.1255	+69	+35
30 Capricorni	6	1.47	5.7	18 31.4	22 56.6	+ 1 25.1	-1.0200	.5679	.1328	-31	-90
γ Capricorni	3½	-1.52	- 6.5	-17 14.7	17 8 38.9	+10 46.8	-0.9817	.5621	+.1503	-26	-90
δ Capricorni	3	1.54	6.8	16 42.8	11 44.3	-10 14.3	-1.0673	.5605	.1551	-32	-90
29 Aqua., *mult.*	6	1.58	7.0	17 35.1	18 39.9	- 3 33.1	+0.9612	.5560	.1662	+73	+15
50 Aquarii	6	1.60	8.2	14 11.1	18 4 47.3	+ 6 13.8	-0.8541	.5497	.1804	-14	-90
B. A. C. 7835	6½	1.60	8.4	13 34.6	7 22.7	+ 8 44.1	-1.0235	.5480	.1838	-24	-90
56 Aquarii	6	1.61	8.2	15 14.8	7 29.6	+ 8 50.8	+0.7565	.5480	.1839	+71	+ 2
74 Aquarii	6	-1.63	- 9.1	-12 18.2	18 27.8	- 4 32.6	-0.2604	.5419	+.1964	+21	-55
f Piscium	6	1.57	10.2	+ 2 55.9	21 19 31.2	- 5 41.6	-0.7389	.5154	.2225	0	-84
ν Piscium	4½	1.54	9.8	4 49.8	22 7 57.3	+ 6 23.0	-0.0630	.5143	.2184	+36	-42
64 Ceti	6½	1.48	9.0	7 57.8	23 42.6	- 2 19.0	-0.1091	.5143	.2098	+35	-44
ξ¹ Ceti	4½	1.48	8.9	8 14.3	23 0 33.9	- 1 29.2	-0.2318	.5143	.2092	+27	-50
B. A. C. 728	6½	1.46	8.4	10 14.7	5 55.1	+ 3 42.7	-1.3237	.5146	.2055	-49	-80
B. A. C. 741	6½	-1.45	- 8.6	+ 9 7.6	6 35.9	+ 4 22.3	+0.0438	.5146	+.2050	+42	-35
ξ Arietis	5½	1.46	8.4	10 1.3	6 45.1	+ 4 31.3	-0.9080	.5146	.2049	-11	-80
B. A. C. 755	6	1.45	8.4	9 58.7	7 46.3	+ 5 30.7	-0.6518	.5146	.2041	+ 4	-78
B. A. C. 830	6	1.41	8.1	10 11.2	16 0.6	-10 29.3	+0.7741	.5158	.1975	+90	+ 6
38 Arietis	5	1.41	7.6	11 54.0	17 15.8	- 9 16.3	-0.8636	.5161	.1964	- 8	-78
B. A. C. 987	6	1.33	7.0	12 33.3	24 6 58.7	+ 4 2.5	+1.0172	.5186	.1830	+90	+24
B. A. C. 1240	6	-1.18	- 4.8	+17 49.6	25 8 3.0	+ 4 21.8	-0.5891	.5252	+.1524	+ 7	-66
B. A. C. 1272	6	1.15	4.6	16 59.5	11 40.6	+ 7 52.8	+0.8788	.5263	.1473	+90	+18
Rumker 1162	6	1.09	4.0	18 6.5	18 22.9	- 9 37.2	+0.5983	.5286	.1374	+82	+ 3
B. A. C. 1361	6	1.08	3.7	18 44.6	20 3.6	- 7 59.6	+0.1240	.5290	.1351	+47	-22
ε Tauri	3½	1.07	3.6	18 53.5	21 52.0	- 6 14.6	+0.2011	.5297	.1323	+52	-18
ι Tauri	5	-0.92	- 2.1	+21 24.2	26 14 37.6	+ 9 59.4	-0.5875	.5355	+.1047	+ 7	-61

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Red'ns from 1871.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x'	y'	N'n.	S'n.
MARCH.											
		s	"	° ′	d h m	h m				°	°
l Tauri	5½	-0.90	- 2.4	+20 14.7	26 16 56.1	-11 46.5	+0.9322	.5362	+.1010	+90	+27
n Tauri	6	0.84	1.6	21 57.7	22 22.9	- 6 30.1	-0.4437	.5383	.0912	+15	-50
JUPITER				22 51.4	23 57.9	- 4 58.2	-1.2027	.5327	.0880	-60	-67
o Tauri	6	0.80	1.5	21 49.4	27 2 22.1	- 2 38.7	+0.0582	.5395	.0839	+43	-20
ζ Tauri	3½	0.74	1.5	21 3.7	7 7.9	+ 1 57.9	+1.2809	.5410	.0754	+90	+65
B. A. C. 1774	6½	0.74	0.8	23 14.8	7 49.8	+ 2 38.4	-1.0809	.5412	.0739	-29	-67
141 Tauri	6	-0.62	- 0.7	+22 23.7	18 22.9	-11 9.2	+0.5337	.5449	+.0533	+77	+ 8
1 Geminorum	5	0.61	0.4	23 16.0	19 29.4	-10 5.0	-0.3706	.5450	.0513	+18	-41
2 Geminorum	6½	0.60	0.2	23 38.9	20 43.8	- 8 53.0	-0.7271	.5455	.0489	- 3	-67
B. A. C. 1970	6½	0.58	0.7	22 12.6	22 2.2	- 7 37.2	+0.9198	.5458	.0465	+90	+32
3 Geminorum	6	0.58	0.3	23 7.9	22 6.2	- 7 33.4	-0.0929	.5458	.0464	+34	-24
6 Geminorum	6	0.56	0.4	22 56.1	23 18.4	- 6 23.6	+0.1782	.5461	.0441	+50	- 9
η Geminorum	3½	-0.55	- 0.5	+22 32.5	28 0 30.6	- 5 13.8	+0.6622	.5465	+.0414	+90	+17
μ Geminorum	3	0.50	- 0.4	22 34.6	4 14.3	- 1 37.5	+0.7630	.5475	.0341	+90	+23
B. A. C. 2238	6	0.34	+ 0.2	23 45.1	17 32.6	+11 13.9	-0.2592	.5508	+.0062	+25	-30
ω Geminorum	6	0.29	0.7	24 23.8	22 15.8	- 8 12.3	-0.9576	.5517	-.0034	-19	-66
44 Geminor.	6	0.27	0.1	22 49.7	23 37.2	- 6 53.7	+0.7506	.5521	.0066	+90	+25
48 Geminor.	6	-0.23	0.7	24 20.6	29 2 49.3	- 7 48.2	-0.9350	.5527	.0133	-17	-66
URANUS				+22 5.6	17 45.1	+10 37.0	+1.0747	.5550	-.0454	+90	+44
84 Geminor.	6½	0.00	+ 0.2	22 40.0	21 11.3	-10 4.0	+0.2845	.5553	.0524	+57	- 5
7 Cancri	6½	+0.05	0.2	22 25.9	30 2 3.8	- 5 21.5	+0.2563	.5556	.0628	+56	- 7
μ¹ Cancri	6	0.07	+ 0.3	23 0.1	3 9.4	- 4 18.2	-0.4291	.5556	.0651	+15	-46
μ² Cancri	5	0.08	0.0	21 57.4	3 50.1	- 3 38.9	+0.6545	.5556	.0667	+90	+14
B. A. C. 2788	6½	+0.14	- 0.3	+21 9.3	9 30.5	+ 1 49.8	+1.1038	.5559	-.0788	+90	+43
η Cancri	6	0.21	0.4	20 52.6	15 4.2	+ 7 11.9	+0.9285	.5559	.0901	+90	+29
*39 Cancri	6	0.24	0.6	20 27.7	18 24.0	+10 24.9	+1.0612	.5561	.0972	+90	+38
*40 Cancri	6	0.24	0.6	20 25.5	18 26.4	+10 27.2	+1.0957	.5561	.0973	+90	+40
γ Cancri	4½	+0.26	- 0.1	+21 55.9	19 48.3	+11 46.4	-0.6536	.5561	-.0999	+ 3	-65
APRIL.											
η Leonis	3½	+0.63	- 2.2	+17 23.4	1 9 48.3	+ 0 28.1	-1.0202	.5541	-.1706	-20	-73
42 Leonis	6	0.68	2.8	15 37.5	16 24.9	+ 6 51.1	-0.3390	.5537	.1813	+21	-52
B. A. C. 3579	6	0.70	3.0	15 0.0	19 35.9	+ 9 55.7	-0.2727	.5537	.1860	+25	-48
i Leonis	6	0.71	3.1	14 47.8	21 8.3	+11 25.0	-0.3490	.5535	.1881	+21	-53
ω Virginis	6½	0.88	4.9	8 50.7	3 3 25.4	- 7 19.5	-0.5181	.5528	.2247	+12	-69
ξ Virginis	5	0.89	4.9	8 58.4	6 32.1	- 4 19.1	-1.3496	.5528	.2274	-53	-81
ν Virginis	4½	+0.89	- 5.1	+ 7 15.0	6 48.5	- 4 3.2	+0.3412	.5528	-.2275	+60	-20
B. A. C. 3996	6	0.89	5.3	5 54.6	8 18.0	- 2 36.8	+1.3636	.5530	.2287	+90	+58
π Virginis	4½	0.92	5.2	7 19.9	13 39.5	+ 2 33.8	-1.3170	.5532	.2328	-46	-83
B. A. C. 4104	6½	0.93	5.6	4 46 2	18 34.5	+ 7 18.8	+0.1237	.5536	.2359	+47	-32
c Virginis	5	0.94	5 7	+ 4 1.8	22 32.6	+11 8.8	-0.0684	.5542	.2381	+36	-43
65 Virginis	6	0.97	6.0	- 4 15.0	5 2 49.5	- 9 32.4	+1.3832	.5598	.2425	+86	+61
80 Virginis	6	+0.97	- 5.9	- 4 44.4	8 13.7	- 4 19.5	+0.5635	.5614	-.2412	+75	-10
94 Virginis	6	0.96	5.5	8 16.6	21 40.7	+ 8 39.0	+0.8758	.5662	.2342	+82	+ 8
95 Virginis	6	0.96	5.4	8 41.9	21 51.8	+ 8 49.8	+1.2508	.5662	.2341	+82	+38
ξ¹ Libræ	6	0.89	4.6	11 22.3	6 18 14.4	+ 4 28.1	-0.6849	.5745	.2144	- 1	-89
o¹ Libræ	6	0.85	3.7	15 4.9	7 5 15.4	- 8 55.4	+0.7132	.5794	.1991	+75	- 1
o² Libræ	6	0.84	3.8	14 40.4	6 5.7	- 8 7.1	+0.1413	.5798	.1977	+41	-32
ζ¹ Libræ	4	+0.83	- 3.4	-16 16.0	8 13.3	- 6 4.2	+1.3041	.5806	-.1945	+74	+50
ζ³ Libræ	6	0.82	3.4	16 10.0	9 13.0	- 5 6.7	+1.0132	.5812	.1928	+74	+19
ζ⁴ Libræ	6	0.82	3.3	16 24.8	10 8.2	- 4 13.7	+1.0819	.5816	.1913	+74	+25
γ Libræ	4½	0.80	3.7	14 21.5	11 14.1	- 3 10.2	-1.1657	.5818	.1895	-37	-90
η Libræ	6	0.78	3.4	15 15.6	14 43.1	+ 0 10.9	-0.9204	.5836	.1833	-19	-90
θ Libræ	4½	+0.76	- 3.0	-16 21.0	18 39.1	+ 3 57.8	-0.5475	.5853	-.1761	+ 2	-76

* Cluster of Præsepe.

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

APRIL.

STAR'S—					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0.		Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x'	y'	N'n.	S'n.
		$\Delta\alpha$	$\Delta\delta$								
		s	″	° ′	d h m	h m				°	°
49 Libræ	5½	+0.73	− 3.0	−16 9.1	7 21 19.4	+ 6 31.9	−1.2084	.5861	−.1714	−44	−90
ν^1 Scorpii	7	0.71	2.2	19 6.8	8 1 54.9	+10 56.8	+0.9694	.5882	.1637	+71	+17
ν^2 Scorpii	4	0.71	2.2	19 7.4	1 55.3	+10 57.2	+0.9777	.5882	.1637	+71	+17
B. A. C. 5408	6½	0.69	2.4	18 12.0	3 0.6	+11 59.9	−0.1155	.5886	.1599	+23	−47
ψ Ophiuchi	5	0.66	1.8	19 44.0	6 44.7	− 8 24.7	+0.8277	.5901	.1519	+70	+ 7
χ Ophiuchi	6	0.65	2.2	18 9.7	7 56.3	− 7 16.0	−0.9164	.5906	.1495	−22	−90
B. A. C. 5663	6½	+0.55	− 1.4	−20 12.0	18 19.6	+ 2 42.9	−0.3194	.5937	−.1264	+ 9	−59
B. A. C. 5758	6	0.50	1.0	21 23.0	23 18.6	+ 7 30.0	+0.2630	.5952	.1145	+40	−25
ξ Ophiuchi	5	0.43	0.9	20 58.3	9 5 5.1	−10 57.3	−0.7668	.5963	.1001	−18	−90
B. A. C. 5866	6	0.42	0.7	21 19.1	6 31.7	− 9 34.2	−0.5612	.5965	.0960	− 7	−79
B. A. C. 5954	6	0.35	0.4	21 49.9	11 58.9	− 4 20.1	−0.5348	.5974	.0824	− 6	−76
58 Ophiuchi	5	0.33	− 0.5	21 37.0	13 48.5	− 2 34.9	−0.8974	.5974	.0775	−28	−90
4 Sagittarii	5	+0.25	+ 0.3	−23 48.1	20 5.9	+ 3 27.3	+0.8622	.5977	−.0613	+66	+11
B. A. C. 6088	6	0.24	0.0	22 46.5	20 56.4	+ 4 15.8	−0.2215	.5977	.0589	+ 8	−53
7 Sagittarii	6	0.24	0.5	24 16.7	21 16.3	+ 4 34.9	+1.2738	.5977	.0583	+66	+59
B. A. C 6161	6	0.19	0.4	23 43.4	10 0 43.5	+ 7 53.6	+0.5312	.5976	.0487	+51	− 9
24 Sagittarii	6	0.08	0.6	24 7.5	9 19.7	− 7 50.8	+0.6177	.5966	.0261	+56	− 4
B. A. C. 6343	6	0.05	0.4	23 36.7	11 8.2	− 6 6.7	+0.0563	.5965	.0211	+19	−37
26 Sagittarii	6	+0.04	+ 0.6	−23 57.0	12 26.0	− 4 52.0	+0.3751	.5961	−.0172	+38	−18
28 Sagittarii	6	+0.01	0.1	22 31.4	14 12.9	− 3 9.4	−1.0990	.5961	.0129	−48	−90
ν^1 Sagittarii	5	−0.03	0.2	22 54.0	15 15.9	− 2 13.7	−0.7440	.5951	.0048	−25	−90
ν^2 Sagittarii	5	0.04	0.2	22 49.7	17 38.0	+ 0 7.5	−0.8185	.5950	.0034	−30	−90
B. A. C. 6448	6	0.04	0.3	23 20.0	17 58.7	+ 0 27.4	−0.3068	.5950	−.0027	− 1	−59
B. A. C. 6485	6½	0.07	0.2	22 52.4	20 11.2	+ 2 34.6	−0.7748	.5944	+.0030	−27	−90
B. A. C. 6524	6½	−0.10	+ 0.1	−22 41.6	22 17.4	+ 4 35.8	−0.9469	.5938	+.0068	−38	−90
B. A. C. 6576	6	0.15	0.7	24 23.9	11 1 37.6	+ 7 48.0	+0.8343	.5924	.0177	+66	+ 9
B. A. C. 6607	6	0.17	0.1	22 38.5	3 40.9	+ 9 46.5	−0.9154	.5918	.0230	−34	−90
χ^2 Sagittarii	6½	0.20	0.7	24 39.8	5 30.9	+11 32.2	+1.1954	.5910	.0279	+66	+42
χ^3 Sagittarii	6	0.20	0.6	24 12.7	5 34.6	+11 35.7	+0.7354	.5910	.0280	+66	+ 3
B. A. C. 6699	6½	0.26	0.4	23 35.3	9 37.6	− 8 30.9	+0.2325	.5893	.0383	+30	−26
B. A. C. 6727	6½	−0.28	+ 0.4	−23 43.2	11 24.8	− 6 47.9	+0.4400	.5886	+.0430	+44	−15
B. A. C. 6864	6	0.39	0.0	23 5.4	20 0.4	+ 1 27.9	+0.2535	.5844	.0639	+34	−25
B. A. C. 6878	6½	0.40	− 0.1	22 57.3	20 57.7	+ 2 22.9	+0.1773	.5837	.0662	+31	−30
B. A. C. 6889	6	0.41	0.5	21 40.6	21 29.1	+ 2 53.1	−1.1028	.5835	.0677	−44	−90
4 Capricorni	6	0.48	0.5	22 12.4	12 2 49.4	+ 8 1.3	−0.1644	.5804	.0801	+13	−50
B. A. C. 7049	6	0.54	0.4	22 49.0	7 34.2	−11 24.6	+0.8726	.5776	0910	+67	+11
17 Capricorni	6	−0.63	− 0.8	−21 58.9	14 33.8	− 4 40.7	+0.6990	.5732	+.1062	+68	0
20 Capricorni	6	0.69	1.8	19 32.1	20 19.4	+ 0 52.2	−1.1945	.5696	.1178	−48	−90
η Capricorni	5½	0.71	1.6	20 21.8	22 22.3	+ 2 50.7	−0.0878	.5681	.1223	+22	−46
27 Capricorni	6	0.74	1.4	21 4.3	13 0 34.2	+ 4 57.8	+0.9230	.5666	.1265	+69	+14
30 Capricorni	6	0.77	2.4	18 31.4	4 16.2	+ 8 31.9	−1.2540	.5646	.1332	−53	−90
γ Capricorni	3½	0.87	3.1	17 14.7	14 3.3	− 6 1.5	−1.2050	.5577	.1505	−45	−90
κ Capricorni	5	−0.89	− 2.4	−19 27.2	15 10.5	− 4 56.7	+1.2800	.5569	+.1524	+71	+49
δ Capricorni	3	0.90	3.4	16 42.7	17 10.6	− 3 0.7	−1.2868	.5558	.1556	−55	−90
29 Aqua., *mult.*	6	0.97	3.3	17 35.1	14 0 11.0	+ 3 45.4	+0.7589	.5508	.1664	+68	+ 2
50 Aquarii	6	1.04	4.7	14 11.0	10 26.3	−10 19.7	−1.0476	.5441	.1807	−28	−90
B. A. C. 7835	6½	1.06	4.9	13 34.5	13 3.8	− 7 47.4	−1.2134	.5426	.1837	−41	−90
56 Aquarii	6	1.07	4.4	15 14.7	13 10.9	− 7 40.6	+0.5753	.5426	.1839	+68	− 8
τ^2 Aquarii	4	−1.14	− 5.0	−14 16.4	22 25.3	+ 1 16.0	+1.2987	.5369	+.1944	+76	+47
74 Aquarii	6	1.14	5.6	12 18.2	15 0 19.0	+ 3 6.0	−0.4256	.5360	.1962	+13	−66
ψ^1 Aquarii	4½	1.21	6.4	9 47.5	11 17.9	−10 15.7	−0.8906	.5303	.2062	−12	−90
ψ^2 Aquarii	4½	1.22	6.4	9 53.3	12 19.5	− 9 16.0	−0.5753	.5295	.2069	+ 6	−78
ψ^3 Aquarii	5	1.22	6.3	10 19.0	12 50.7	− 8 45.8	−0.0101	.5294	.2075	+37	−40
B. A. C. 8214	6½	−1.26	− 7.0	− 8 10.8	21 9.5	+ 0 42.2	−0.5170	.5257	+.2131	+ 9	−75

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

APRIL.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'us from 1871.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. *H*	*Y*	*x′*	*y′*	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 8274	6½	-1.30	- 7.3	- 7 5.9	16 3 45.9	+ 5 42.2	-0.2860	.5229	+.2172	+23	-56
30 Piscium	5	1.33	7.5	6 44.0	10 38.6	-11 37.3	+0.8262	.5202	.2203	+83	+ 5
33 Piscium	5	1.33	7.5	6 25.9	12 23.3	- 9 55.7	+0.8880	.5196	.2210	+84	+ 9
B. A. C. 17	6½	1.34	7.7	5 58.0	14 57.7	- 7 25.9	+0.9574	.5189	.2219	+84	+13
B. A. C. 81	6½	1.37	8.2	2 56.1	22 20.1	- 0 16.5	-0.6731	.5169	.2239	+ 3	-87
14 Ceti	6½	-1.39	- 8.4	- 1 13.1	17 4 6.4	+ 5 19.7	-1.2377	.5154	+.2249	-36	-90
15 Ceti	6½	1.39	8.4	- 1 12.9	5 26.9	+ 6 37.8	-0.9382	.5151	.2251	-12	-90
26 Ceti, *mult.*	6½	1.43	8.6	+ 0 40.3	19 1.3	- 4 7.3	+0.0673	.5130	.2250	+43	-36
B. A. C. 987	6	1.47	6.9	12 33.3	20 14 11.4	-10 57.2	+1.1690	.5188	.1853	+90	+35
B. A. C. 1240	6	1.42	5.0	17 49.6	21 15 14.6	-10 39.0	-0.3948	.5264	.1547	+18	-53
B. A. C. 1272	6	-1.38	- 5.0	+16 59.5	18 52.0	- 7 8.2	+1.0809	.5276	+.1494	+90	+33
Rumker 1162	6	1.37	4.4	18 6.5	22 1 33.7	- 0 38.8	+0.8096	.5298	.1394	+90	+16
B. A. C. 1361	6	1.37	4.2	18 44.6	3 14.3	+ 0 58.7	+0.3367	.5301	.1371	+60	-11
ε Tauri	3½	1.36	4.1	18 53.5	5 2.6	+ 2 43.6	+0.4165	.5309	.1342	+66	- 6
ι Tauri	5	1.27	2.6	21 24.2	21 47.3	- 5 3.2	-0.3540	.5363	.1072	+20	-45
l Tauri	5½	-1.25	- 2.7	+20 14.7	23 0 5.9	- 2 49.0	+1.1727	.5369	+.1025	+90	+47
105 Tauri	6	1.26	2.4	21 31.9	0 7.0	- 2 47.9	-0.2551	.5370	.1024	+25	-39
κ Tauri	6	1.22	2.0	21 57.7	5 32.9	+ 2 27.6	-0.2016	.5386	.0923	+28	-35
ο Tauri	6	1.19	1.8	21 49.4	9 32.3	+ 6 19.2	+0.3058	.5400	.0851	+59	- 7
B. A. C. 1774	6½	-1.15	- 1.1	+23 14.8	15 0.6	+11 36.9	-0.8335	.5412	+.0750	- 9	-67
JUPITER				23 11.4	16 13.9	-11 12.2	-0.6811	.5335	.0723	+ 1	-65
141 Tauri	6	1.04	0.8	22 23.7	24 1 35.6	- 2 8.9	+0.7958	.5439	.0542	+90	+24
1 Geminorum	5	1.04	0.5	23 16.0	2 42.3	- 1 4.4	-0.1118	.5444	.0519	+33	-26
2 Geminorum	6½	-1.03	- 0.3	+23 38.9	3 57.1	+ 0 8.0	-0.4691	.5446	+.0498	+14	-47
B. A. C. 1970	6½	1.01	0.7	22 12.6	5 15.9	+ 1 24.2	+1.1866	.5449	.0473	+90	+54
3 Geminorum	6	1.01	0.4	23 7.9	5 19.9	+ 1 28.0	+0.1688	.5449	.0472	+50	-10
5 Geminorum	6	1.00	0.0	24 26.7	6 8.2	+ 2 14.8	-1.2477	.5450	.0455	-51	-66
6 Geminorum	6	-0.98	- 0.4	+22 56.1	6 32.5	+ 2 38.2	+0.4422	.5451	+.0444	+69	+ 4
η Geminorum	3½	0.97	0.5	22 32.5	7 45.0	+ 3 48.3	+0.9292	.5454	.0420	+90	+33
μ Geminorum	3	0.95	- 0.3	22 34.6	11 30.0	+ 7 26.0	+1.0325	.5461	.0343	+90	+41
B. A. C. 2154	6½	0.89	+ 0.7	24 41.6	18 9.8	-10 7.6	-1.1215	.5471	.0209	-33	-66
B. A. C. 2238	6	-0.81	+ 0.7	+23 45.1	25 0 54.3	- 3 36.7	+0.0104	.5483	+.0068	+40	-15
ω Geminorum	6	0.76	1.1	24 23.8	5 40.3	+ 0 59.8	-0.6913	.5489	-.0035	- 1	-62
44 Geminor.	6	0.73	0.7	22 49.7	7 2.5	+ 2 19.2	+1.0287	.5490	.0061	+90	+44
48 Geminor.	6	0.70	1.3	24 20.6	10 16.7	+ 5 26.8	-0.6680	.5493	.0128	+ 1	-69
B. A. C. 2514	6½	-0.55	+ 1.8	+24 30.7	22 31.6	- 6 43.0	-1.1668	.5502	-.0390	-38	-66
84 Geminor.	6½	0.47	1.3	22 40.0	26 4 53.7	- 0 33.8	+0.5617	.5502	.0521	+78	+10
7 Cancri	6½	0.41	1.3	22 25.9	9 51.1	+ 4 13.6	+0.5327	.5504	.0625	+77	+ 8
μ¹ Cancri	6	0.39	1.6	23 0.1	10 57.7	+ 5 17.8	-0.1593	.5502	.0647	+30	-30
μ² Cancri	5	-0.38	+ 1.2	+21 57.4	11 39.1	+ 5 57.9	+0.9344	.5502	-.0663	+90	+31
η Cancri	6	0.23	1.0	20 52.7	23 5.8	- 6 58.6	+1.2078	.5497	.0895	+90	+52
γ Cancri	4½	-0.17	+ 1.5	21 55.9	27 3 55.7	- 2 18.5	-0.3889	.5495	.0991	+18	-47
η Leonis	3½	+0.30	- 0.1	17 23.5	28 18 48.7	+11 16.4	-0.7945	.5459	.1692	- 5	-73
42 Leonis	6	+0.38	- 0.7	+15 37.5	29 1 35.5	- 6 10.3	-0.1147	.5454	-.1799	+33	-39
B. A. C. 3579	6	0.41	0.9	15 0.0	4 51.1	- 3 1.2	-0.0522	.5453	.1846	+37	-36
i Leonis	6	0.43	1.1	14 47.8	6 25.8	- 1 29.6	-0.1316	.5451	.1870	+33	-41
ι Leonis, *mult.*	4	0.67	2.4	11 14.4	30 6 36.0	- 2 7.3	-1.3207	.5453	.2171	-48	-79
ω Virginis	6½	+0.73	- 3.2	+ 8 50.8	13 24.2	+ 3 27.4	-0.3549	.5459	-.2239	+21	-58
ξ Virginis	5	0.76	3.2	8 58.4	16 34.6	+ 6 31.6	-1.1987	.5461	.2266	-32	-81
ν Virginis	4½	0.76	3.6	7 15.1	16 51.2	+ 6 47.6	+0.5033	.5461	.2268	+71	-12
π Virginis	4½	+0.82	- 3.7	+ 7 19.9	23 49.6	- 9 28.0	-1.1800	.5471	-.2324	-30	-83

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

MAY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Red'ns from 1871.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
11 Virginis	6	+0.86	- 3.9	+ 6 31.4	1 4 5.5	- 5 20.6	-1.3515	.5479	-.2353	-51	-84
B. A. C. 4104	6½	0.86	4.4	4 46.3	4 49.5	- 4 38.1	+0.2577	.5480	.2357	+55	-26
c Virginis	5	0.89	4.5	+ 4 1.8	8 51.0	- 0 44.6	+0.0552	.5488	.2381	+43	-36
80 Virginis	6	1.11	5.9	- 4 44.4	2 18 46.6	+ 8 1.5	+0.6008	.5607	.2434	+78	- 8
94 Virginis	6	1.18	6.0	8 16.6	3 8 10.9	- 3 2.6	+0.8752	.5671	.2373	+82	+ 8
95 Virginis	6	1.18	6.0	8 41.9	8 21.9	- 2 52.0	+1.2480	.5675	.2371	+82	+37
ξ^1 Libræ	6	+1.25	- 5.4	-11 22.4	4 4 28.5	- 7 29.8	-0.7194	.5790	-.2184	- 3	-90
o^1 Libræ	6	1.27	4.8	15 4.9	15 19.3	+ 2 56.6	+0.6324	.5855	.2036	+72	- 5
o^2 Libræ	6	1.27	4.8	14 40.4	16 8.6	+ 3 43.9	+0.0644	.5859	.2022	+37	-36
ζ^1 Libræ	4	1.28	4.6	16 16.0	18 13.4	+ 5 43.1	+1.2098	.5871	.1989	+74	+36
ζ^3 Libræ	6	1.28	4.5	16 10.0	19 11.8	+ 6 40.1	+0.9194	.5876	.1973	+74	+12
ζ^4 Libræ	6	1.28	4.5	16 24.9	20 5.8	+ 7 32.0	+0.9851	.5882	.1958	+74	+17
γ Libræ	4½	+1.27	- 4.5	-14 21.5	21 10.2	+ 8 34.0	-1.2399	.5888	-.1940	-44	-90
η Libræ	6	1.27	4.3	15 15.7	5 0 34.2	+11 50.0	-1.0042	.5909	.1878	-25	-90
θ Libræ	4½	1.27	4.0	16 21.0	4 24.3	- 8 28.9	-0.6437	.5932	.1805	- 3	-86
49 Libræ	5½	1.26	3.9	16 9.1	7 0.5	- 5 58.9	-1.3011	.5944	.1757	-57	-90
ν^1 Scorpii	7	1.27	3.3	19 6.9	11 28.4	- 1 41.7	+0.8400	.5969	.1663	+71	+ 8
ν^2 Scorpii	4	1.27	3.3	19 7.4	11 28.8	- 1 41.3	+0.8482	.5969	.1663	+71	+ 8
B. A. C. 5408	6½	+1.26	- 3.3	-18 12.0	12 32.3	- 0 40.3	-0.2328	.5972	-.1641	+17	-54
ψ Ophiuchi	5	1.26	2.9	19 44.0	16 9.9	+ 2 48.5	+0.6902	.5988	.1565	+70	0
χ Ophiuchi	6	1.25	3.0	18 9.7	17 19.3	+ 3 55.1	-1.0318	.5995	.1541	-33	-90
B. A. C. 5663	6½	1.21	2.1	20 12.0	6 3 23.3	-10 25.5	-0.4606	.6039	.1297	+ 1	-71
B. A. C. 5758	6	1.19	1.5	21 23.0	8 12.5	- 5 48.2	+0.1049	.6042	.1181	+31	-34
ξ Ophiuchi	5	1.15	1.2	20 58.3	13 47.3	- 0 27.3	-0.9177	.6072	.1032	-28	-90
B. A. C. 5866	6	+1.14	- 1.1	-20 19.1	15 11.0	+ 0 52.9	-0.7173	.6073	-.0998	-16	-90
B. A. C. 5954	6	1.11	0.6	21 49.9	20 26.9	+ 5 55.7	-0.6987	.6083	.0850	-16	-90
58 Ophiuchi	5	1.09	- 0.5	21 37.0	22 12.6	+ 7 37.0	-1.0580	.6084	.0803	-39	-90
4 Sagittarii	5	1.05	+ 0.4	23 48.1	7 4 16.8	-10 34.0	+0.6659	.6087	.0638	+63	- 2
B. A. C. 6088	6	1.04	0.2	22 46.5	5 5.6	- 9 47.3	-0.4017	.6087	.0613	- 1	-66
7 Sagittarii	6	1.04	0.6	24 16.7	5 24.8	- 9 28.9	+1.0695	.6087	.0601	+66	+28
9 Sagittarii	4½	+1.04	+ 0.6	-24 21.6	5 47.6	- 9 7.1	+1.1277	.6087	-.0578	+66	+33
B. A. C. 6161	6	1.01	0.7	23 43.4	8 44.6	- 6 17.5	+0.3348	.6087	.0508	+38	-21
24 Sagittarii	6	0.92	1.3	24 7.5	17 2.7	+ 1 39.8	+0.4104	.6076	.0273	+41	-17
B. A. C. 6343	6	0.90	1.3	23 36.7	18 47.5	+ 3 20.2	-0.1440	.6074	.0223	+ 9	-49
26 Sagittarii	6	0.89	1.4	23 57.0	20 2.5	+ 4 32.2	+0.1685	.6070	.0188	+26	-30
ν^1 Sagittarii	5	0.83	1.4	22 54.0	8 0 42.5	+ 9 0.6	-0.9376	.6056	.0053	-37	-90
ν^2 Sagittarii	5	+0.82	+ 1.4	-22 49.7	1 3.8	+ 9 21.0	-1.0113	.6056	-.0046	-42	-90
B. A. C. 6448	6	0.82	1.6	23 20.0	1 23.8	+ 9 40.2	-0.5077	.6052	-.0032	-12	-75
B. A. C. 6485	6½	0.79	1.5	22 52.4	3 31.8	+11 42.8	-0.9703	.6045	+.0028	-40	-90
B. A. C. 6490	6½	0.80	2.2	25 1.4	3 48.2	+11 58.6	+1.1839	.6045	.0033	+65	+40
B. A. C. 6524	6½	0.77	1.6	22 41.6	5 33.7	-10 20.2	-1.1413	.6038	.0085	-53	-90
B. A. C. 6576	6	0.74	2.2	24 23.9	8 47.3	- 7 14.6	+0.6100	.6026	.0172	+55	- 6
B. A. C. 6607	6	+0.70	+ 1.8	-22 38.5	10 46.6	- 5 20.2	-1.1153	.6017	+.0228	-49	-90
χ^1 Sagittarii	6	0.69	2.5	24 45.3	12 30.4	- 3 40.6	+1.0541	.6006	.0277	+65	+26
χ^2 Sagittarii	6½	0.69	2.5	24 39.8	12 33.0	- 3 38.1	+0.9625	.6006	.0277	+66	+19
χ^3 Sagittarii	6	0.69	2.3	24 12.7	12 36.5	- 3 34.8	+0.5094	.6005	.0279	+48	-11
B. A. C. 6699	6½	0.63	2.3	23 35.3	16 31.8	+ 0 11.0	+0.0114	.5984	.0385	+18	-39
B. A. C. 6727	6½	0.60	2.5	23 43.2	18 15.7	+ 1 50.6	+0.2147	.5979	.0427	+30	-28
B. A. C. 6864	6	+0.49	+ 2.5	-23 5.3	9 2 35.8	+ 9 50.8	+0.0262	.5925	+.0647	+22	-38
B. A. C. 6878	6½	0.48	2.5	22 57.2	3 31.5	+10 44.2	-0.0494	.5920	.0673	+18	-43
4 Capricorni	6	0.40	2.4	22 12.3	9 13.4	- 7 47.3	-0.3892	.5883	.0808	+ 1	-65
B. A. C. 7049	6	0.34	2.7	22 49.0	13 50.7	- 3 20.8	+0.6331	.5847	.0920	+62	- 4
17 Capricorni	6	0.25	2.6	21 58.8	20 40.0	+ 3 13.0	+0.4606	.5793	.1074	+51	-14
η Capricorni	5½	+0.15	+ 2.1	-20 21.8	10 4 18.1	+10 34.0	-0.3188	.5736	+.1233	+10	-69

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

MAY.

STAR'S—					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
χ Capricorni	6	+0.13	+ 2.6	-21 42.5	10 6 1.9	-11 46.1	+1.2850	.5720	+.1271	+69	+54
27 Capricorni	6	0.12	2.4	21 4.3	6 27.4	-11 21.5	+0.6819	.5715	.1279	+68	- 2
φ Capricorni	6	+0.09	2.5	21 11.0	9 2.9	- 8 51.7	+1.1363	.5696	.1327	+69	+31
ε Capricorni	4½	-0.04	2.1	20 2.5	18 21.2	+ 0 6.6	+1.2770	.5620	.1494	+70	+49
κ Capricorni	5	0.07	1.9	19 27.1	20 48.6	+ 2 28.7	+1.0387	.5600	.1539	+71	+22
29 Aqua., *mult.*	6	0.18	1.2	17 35.0	11 5 42.0	+11 3.7	+0.5256	.5526	.1678	+62	-12
50 Aquarii	6	-0.29	+ 0.0	-14 10.9	15 51.5	- 3 7.2	-1.2656	.5450	+.1817	-48	-90
56 Aquarii	6	0.32	+ 0.3	15 14.6	18 35.0	- 0 29.2	+0.3508	.5428	.1851	+53	-21
τ^2 Aquarii	4	0.41	- 0.1	14 16.4	12 3 46.6	+ 8 24.6	+1.0784	.5364	.1953	+76	+23
74 Aquarii	6	0.43	0.8	12 18.1	5 40.0	+10 14.4	-0.6378	.5351	.1972	+ 1	-84
ψ^1 Aquarii	4½	0.53	1.7	9 47.4	16 38.1	- 3 8.1	-1.0919	.5283	.2069	-26	-90
ψ^2 Aquarii	4½	0.54	1.7	9 53.2	17 39.8	- 2 8.4	-0.7766	.5277	.2077	- 5	-90
ψ^3 Aquarii	5	-0.55	- 1.6	-10 19.0	18 10.9	- 1 38.2	-0.2117	.5275	+.2081	+26	-52
B. A. C. 8214	6½	0.62	2.3	8 10.7	13 2 30.8	+ 6 26.4	-0.7386	.5231	.2138	- 2	-90
B. A. C. 8274	6½	0.68	2.7	7 5.9	9 8.7	-11 7.7	-0.4697	.5200	.2174	+14	-69
30 Piscium	5	0.74	2.9	6 43.9	16 3.6	- 4 25.0	+0.6518	.5169	.2204	+81	- 5
33 Piscium	5	0.75	3.0	6 25.8	17 49.0	- 2 42.7	+0.7160	.5164	.2212	+84	- 2
B. A. C. 17	6½	0.77	3.1	5 58.0	20 24.4	- 0 11.9	+0.7898	.5154	.2221	+70	+ 3
B. A. C. 81	6½	-0.82	- 4.0	- 2 56.0	14 3 50.1	+ 7 0.8	-0.8306	.5132	+.2240	- 5	-90
14 Ceti	6½	0.87	4.5	1 13.0	9 39.3	-11 20.1	-1.3864	.5116	.2250	-61	-90
15 Ceti	6½	0.87	4.5	1 12.9	11 0.6	-10 1.1	-1.0849	.5115	.2251	-22	-90
20 Ceti	5½	0.93	4.3	- 1 50.8	18 57.4	- 2 17.9	+1.3932	.5099	.2254	+88	+69
26 Ceti, *mult.*	6½	0.97	4.9	+ 0 40.4	15 6 42.7	+ 3 17.6	-0.0538	.5090	.2251	+37	-43
29 Ceti	6½	0.98	5.0	1 19.0	2 56.6	+ 5 27.7	-0.2538	.5089	.2249	+26	-54
33 Ceti	6	-0.99	- 5.1	+ 1 45.4	4 19.6	+ 6 48.3	-0.4244	.5089	+.2248	+18	-65
35 Ceti	6½	0.99	5.1	1 47.3	5 23.1	+ 7 50.0	-0.2201	.5086	.2244	+28	-52
f Piscium	6	1.01	5.4	2 56.0	8 12.2	+10 34.4	-0.8400	.5085	.2240	- 6	-87
ν Piscium	4½	1.08	5.6	4 49.9	20 52.5	- 1 6.9	-0.1043	.5085	.2203	+34	-45
64 Ceti	6½	1.16	5.9	7 57.8	16 12 52.7	- 9 33.8	-0.0813	.5101	.2124	+36	-43
ξ^1 Ceti	4½	1.17	6.0	8 14.3	13 44.6	- 8 43.4	-0.2009	.5103	.2119	+29	-50
B. A. C. 728	6½	-1.19	- 6.1	+10 14.8	19 9.9	- 3 27.4	-1.2761	.5112	+.2085	-41	-80
B. A. C. 741	6½	1.20	5.9	9 6.6	19 51.2	- 2 47.2	+0.1021	.5113	.2079	+46	-32
ξ Arietis	5½	1.20	6.0	10 1.4	20 0.5	- 2 38.2	-0.8543	.5113	.2078	- 7	-80
B. A. C. 755	6	1.20	6.0	9 58.8	21 2.4	- 1 38.1	-0.5926	.5113	.2071	+ 8	-74
B. A. C. 830	6	1.23	5.8	10 11.2	17 5 21.8	+ 6 27.0	+0.8752	.5136	.2005	+90	+11
38 Arietis	5	1.24	5.9	11 54.0	6 37.7	+ 7 40.7	-0.7651	.5137	.1995	+ 8	-74
ι Tauri	5	-1.32	- 2.8	+21 24.1	20 4 7.6	+ 2 4.5	-0.2579	.5373	+.1082	+26	-40
l Tauri	5½	1.31	2.8	20 14.7	6 26.1	+ 5 18.6	+1.2744	.5380	.1038	+90	+60
105 Tauri	6	1.32	2.6	21 31.9	6 27.5	+ 5 20.0	-0.1558	.5380	.1037	+31	-33
ϰ Tauri	6	1.30	2.3	21 57.7	11 52.7	+10 34.8	-0.0951	.5396	.0941	+35	-29
ο Tauri	6	1.29	2.0	21 49.4	15 51.8	- 9 33.9	+0.4180	.5410	.0868	+67	- 1
B. A. C. 1774	6½	1.27	1.5	23 14.8	21 19.7	- 4 16.6	-0.7168	.5425	.0766	- 1	-67
141 Tauri	6	-1.21	- 1.0	+22 23.7	21 7 54.2	+ 5 57.1	+0.9283	.5451	+.0557	+90	+32
1 Geminorum	5	1.22	0.8	23 16.0	9 0.9	+ 7 1.6	+0.0197	.5455	.0535	+41	-19
JUPITER				23 22.6	9 51.8	+ 7 50.9	-0.0564	.5359	.0517	+37	-23
2 Geminorum	6½	1.21	0.7	23 38.8	10 15.6	+ 8 13.9	-0.3372	.5456	.0512	+21	-39
3 Geminorum	6	1.20	0.7	23 7.9	11 38.3	+ 9 34.0	+0.3038	.5460	.0481	+59	- 3
5 Geminorum	6	1.21	0.4	24 26.7	12 26.6	+10 20.6	-1.1161	.5463	.0463	-32	-66
6 Geminorum	6	-1.19	- 0.6	+22 56.1	12 50.9	+10 44.1	+0.5792	.5464	+.0457	+82	+12
η Geminorum	3½	1.18	0.6	22 32.5	14 3.4	+11 54.2	+1.0688	.5465	.0434	+90	+43
μ Geminorum	3	1.15	- 0.4	22 34.6	17 48.4	- 8 28.2	+1.1765	.5473	.0355	+90	+53
B. A. C. 2154	6½	1.12	+ 0.4	24 41.6	22 0 28.3	- 2 1.6	-0.9784	.5480	.0216	-20	-66
B. A. C. 2238	6	1.07	0.6	23 45.1	7 13.3	+ 4 29.8	+0.1636	.5489	+.0078	+50	- 6
ω Geminorum	6	-1.02	+ 0.8	+23 23.8	11 59.9	+ 9 6.9	+0.5683	.5492	-.0023	+81	+15

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

MAY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Red'ns from 1871.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
44 Geminor.	6	-1.00	+ 0.7	+22 49.7	22 13 22.3	+10 26.5	+1.1907	.5493	-.0056	+90	+57
48 Geminor.	6	0.99	1.3	24 20.6	16 37.0	-10 25.3	-0.5103	.5493	.0125	+11	-47
B. A. C. 2514	6½	0.87	2.0	24 30.7	23 4 55.2	+ 1 28.1	-1.0044	.5497	.0381	-22	-66
84 Geminor.	6½	0.80	1.8	22 40.0	11 19.8	+ 7 39.8	+0.7382	.5490	.0512	+90	+20
7 Cancri	6½	0.74	1.9	22 26.0	16 19.5	-11 30.6	+0.7119	.5487	.0616	+90	+18
μ^1 Cancri	6	0.73	2.1	23 0.1	17 26.6	-10 25.7	+0.0162	.5484	.0643	+41	-20
μ^2 Cancri	5	-0.72	+ 1.8	+21 57.4	18 8.4	- 9 45.4	+1.1176	.5484	-.0653	+90	+45
γ Cancri	4½	0.54	2.4	21 55.9	24 10 35.8	+ 6 9.1	-0.2081	.5463	.0984	+28	-36
η Cancri	3½	-0.05	1.7	17 23.5	26 2 12.7	- 3 31.9	-0.6167	.5390	.1672	+ 6	-68
42 Leonis	6	+0.03	1.1	15 37.6	9 9.4	+ 3 11.3	+0.0697	.5380	.1775	+44	-29
B. A. C. 3579	6	0.07	0.9	15 0.1	12 30.2	+ 6 25.7	+0.1321	.5377	.1825	+48	-27
i Leonis	6	+0.10	+ 0.9	+14 47.8	14 7.5	+ 7 59.9	+0.0501	.5373	-.1845	+43	-31
k Leonis	6	0.18	+ 0.9	14 52.5	20 57.2	- 9 23.7	-1.3198	.5368	.1936	-51	-75
ι Leonis, *mult.*	4	0.39	- 0.3	11 14.4	27 14 59.7	+ 8 4.2	-1.1682	.5360	.2140	-30	-79
ω Virginis	6½	0.47	1.2	8 50.8	22 0.5	- 9 8.5	-0.1944	.5364	.2207	+29	-49
ξ Virginis	5	0.51	1.1	8 58.5	28 1 16.8	- 5 58.4	-1.0532	.5368	.2236	-20	-81
ν Virginis	4½	+0.51	- 1.5	+ 7 15.1	1 34.1	- 5 41.7	+0.6722	.5368	-.2239	+87	- 2
A^1 Virginis	5½	0.52	1.1	8 57.7	2 33.3	- 4 44.4	-1.3207	.5357	.2242	-46	-81
π Virginis	4½	0.59	1.7	7 20.0	8 45.6	+ 1 15.9	-1.0409	.5374	.2293	-19	-83
11 Virginis	6	0.64	1.9	6 31.5	13 9.5	+ 5 31.3	-1.2187	.5384	.2322	-34	-84
B. A. C. 4104	6½	0.65	2.5	4 46.3	13 54.8	+ 6 15.1	+0.4113	.5386	.2328	+65	-18
c Virginis	5	+0.70	- 2.7	+ 4 1.8	18 3.9	+10 16.2	+0.2012	.5394	-.2351	+52	-29
80 Virginis	6	1.06	4.9	- 4 44.4	30 4 56.9	- 4 0.0	+0.7042	.5527	.2414	+85	- 2
94 Virginis	6	1.20	5.3	8 16.6	18 38.6	+ 9 13.2	+0.9576	.5609	.2362	+92	+13
95 Virginis	6	1.20	5.4	8 41.9	18 49.9	+ 9 24.2	+1.3332	.5612	.2361	+92	+48
ξ^1 Libræ	6	+1.38	- 5.1	-11 22.4	31 15 14.4	+ 5 4.5	-0.6801	.5749	-.2187	0	-89
JUNE.											
o^1 Libræ	6	+1.48	- 5.0	-15 4.9	1 2 10.3	- 8 24.2	+0.6566	.5833	-.2045	+73	-14
o^2 Libræ	6	1.49	4.9	14 40.4	2 59.8	- 7 36.7	+0.0866	.5838	.2031	+38	-35
ζ^1 Libræ	4	1.51	4.9	16 16.0	5 5.1	- 5 36.1	+1.2297	.5855	.2000	+74	+38
ζ^3 Libræ	6	1.51	4.8	16 10.0	6 3.7	- 4 39.8	+0.9373	.5863	.1984	+74	+13
ζ^4 Libræ	6	1.52	4.8	16 24.9	6 57.8	- 3 47.8	+1.0018	.5869	.1969	+74	+18
γ Libræ	4½	+1.51	- 4.5	-14 21.5	8 2.4	- 2 45.6	-1.2260	.5878	-.1952	-43	-90
η Libræ	6	1.54	4.4	15 15.7	11 26.7	+ 1 30.7	-0.9949	.5906	.1892	-24	-90
θ Libræ	4½	1.56	4.2	16 21.0	15 16.6	+ 4 11.5	-0.6400	.5929	.1826	- 3	-86
49 Libræ	5½	1.57	4.0	16 9.1	17 52.4	+ 6 41.2	-1.3002	.5951	.1775	-56	-90
ν^1 Scorpii	7	1.62	3.8	19 6.9	22 19.3	+10 57.4	+0.8291	.5979	.1687	+71	+ 7
ν^2 Scorpii	4	+1.62	- 3.8	-19 7.4	22 19.6	+10 57.7	+0.8371	.5979	-.1687	+71	+ 7
B. A. C. 5408	6½	1.62	3.6	18 12.0	23 22.8	+11 58.4	-0.2424	.5991	.1660	+17	-54
ψ Ophiuchi	5	1.64	3.4	19 44.0	2 2 58.9	- 8 34.3	+0.6724	.6012	.1585	+69	- 3
χ Ophiuchi	6	1.63	3.2	18 9.7	4 7.8	- 7 28.2	-1.0447	.6020	.1561	-30	-90
B. A. C. 5663	6½	1.67	2.3	20 12.0	14 5.5	+ 2 5.0	-0.4895	.6080	.1324	+ 1	-72
B. A. C. 5758	6	+1.67	- 1.8	-21 23.0	17 53.6	+ 5 41.0	+0.0658	.6102	-.1201	+29	-36
ξ Ophiuchi	5	1.66	1.3	20 58.3	3 0 19.9	+11 53.5	-0.9554	.6126	.1059	-30	-90
B. A. C. 5866	6	1.66	1.1	21 19.1	2 42.1	- 9 47.6	-0.7586	.6133	.1017	-18	-90
B. A. C. 5954	6	1.66	0.6	21 49.9	6 51.9	- 5 51.1	-0.7459	.6149	.0875	-18	-90
58 Ophiuchi	5	1.67	- 0.4	21 37.0	8 35.4	- 4 12.0	-1.1038	.6153	.0824	-43	-90
4 Sagittarii	5	+1.68	+ 0.4	-23 48.1	14 31.5	+ 1 28.8	+0.5955	.6166	-.0653	+57	- 6
B. A. C. 6088	6	1.67	0.4	22 46.5	15 19.1	+ 2 14.4	-0.4615	.6166	.0635	- 4	-72
7 Sagittarii	6	1.68	0.6	24 16.7	15 37.8	+ 2 32.2	+0.9933	.6167	.0621	+66	+20
9 Sagittarii	4½	1.68	0.6	24 21.6	16 0.1	+ 2 53.6	+1.0503	.6169	.0613	+66	+25
B. A. C 6161	6	+1.67	+ 0.9	-23 43.4	18 52.8	+ 5 38.8	+0.2626	.6170	-.0527	+34	-25

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JUNE.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
24 Sagittarii	6	+1.61	+ 1.8	-24 7.5	4 2 57.8	-10 37.0	+0.3280	.6170	-.0288	+36	-21
B. A. C. 6343	6	1.61	1.9	23 36.7	4 39.6	- 8 59.6	-0.2214	.6165	.0235	+ 5	-53
26 Sagittarii	6	1.61	2.1	23 57.0	5 52.5	- 7 49.8	+0.0858	.6163	.0200	+21	-35
B. A. C. 6369	6	1.62	2.4	25 8.4	6 56.3	- 6 48.7	+1.2388	.6160	.0169	+65	+50
ν^1 Sagittarii	5	1.57	2.4	22 54.0	10 24.3	- 3 29.6	-1.0100	.6152	.0062	-42	-90
ν^2 Sagittarii	5	1.56	2.4	22 49.7	10 45.0	- 3 9.8	-1.0829	.6152	.0054	-48	-90
B. A. C. 6448	6	+1.57	+ 2.5	-23 20.0	11 4.5	- 2 51.1	-0.5867	.6152	-.0047	-16	-83
B. A. C. 6485	6½	1.55	2.7	22 52.4	13 8.6	- 0 52.4	-1.0452	.6148	+.0014	-45	-90
B. A. C. 6490	6½	1.57	3.1	25 1.4	13 24.5	- 0 37.1	+1.0794	.6143	.0035	+65	+29
B. A. C. 6524	6½	1.53	2.8	22 41.5	15 6.8	+ 1 0.8	-1.2151	.6140	.0072	-60	-90
B. A. C. 6576	6	1.52	3.5	24 23.9	18 14.3	+ 4 0.4	+0.5085	.6128	.0163	+47	-12
B. A. C. 6607	6	1.49	3.3	22 38.4	20 9.9	+ 5 51.1	-1.1940	.6119	.0220	-57	-90
χ^1 Sagittarii	6	+1.49	+ 3.9	-24 45.3	21 50.4	+ 7 27.4	+0.9428	.6114	+.0271	+65	+17
χ^2 Sagittarii	6½	1.49	3.9	24 39.8	21 52.9	+ 7 29.7	+0.8525	.6114	.0272	+66	+10
χ^3 Sagittarii	6	1.49	3.8	24 12.7	21 56.3	+ 7 33.0	+0.4058	.6114	.0273	+41	-17
B. A. C. 6699	6½	1.44	4.0	23 35.2	5 1 44.0	+11 11.2	-0.0886	.6093	.0383	+13	-45
B. A. C. 6727	6½	1.43	4.2	23 43.1	3 24.4	-11 12.7	+0.1104	.6084	.0434	+24	-34
B. A. C. 6864	6	1.34	4.7	23 5.3	11 27.8	- 3 29.3	-0.0817	.6034	.0654	+16	-45
B. A. C. 6878	6½	+1.33	+ 4.8	-22 57.2	12 21.7	- 2 37.6	-0.1567	.6028	+.0671	+12	-49
4 Capricorni	6	1.27	5.0	22 12.3	17 52.0	+ 2 39.2	-0.4959	.5990	.0819	- 4	-73
B. A. C. 7049	6	1.22	5.5	22 48.9	22 19.8	+ 6 56.3	+0.5078	.5958	.0928	+53	-11
17 Capricorni	6	1.14	5.7	21 58.8	6 4 55.3	-10 43.8	+0.3336	.5899	.1088	+44	-21
η Capricorni	5½	1.04	5.7	20 21.7	12 18.0	- 3 38.3	-0.4379	.5836	.1250	+ 3	-68
χ Capricorni	6	1.02	6.2	21 42.5	13 58.4	- 2 1.8	+1.1400	.5821	.1287	+69	+32
27 Capricorni	6	+1.01	+ 6.0	-21 4.2	14 23.0	- 1 38.1	+0.5463	.5816	+.1299	+59	-10
ϕ Capricorni	6	0.98	6.2	21 11.0	16 53.5	+ 0 46.6	+0.9931	.5794	.1347	+69	+19
ϵ Capricorni	4½	0.87	6.2	20 2.4	7 1 53.8	+ 9 26.9	+1.1277	.5711	.1519	+70	+30
κ Capricorni	5	0.83	6.1	19 27.1	4 16.6	+11 44.4	+0.8923	.5690	.1560	+71	+11
29 Aqua., *mult.*	6	0.72	5.8	17 34.9	12 54.0	- 3 56.6	+0.3843	.5609	.1702	+54	-19
56 Aquarii	6	0.56	5.3	15 14.6	8 1 25.7	+ 8 9.1	+0.2097	.5497	.1877	+45	-28
τ^1 Aqua., *mult.*	6	+0.46	+ 5.3	-14 44.1	9 30.4	- 8 2.4	+1.2365	.5429	+.1968	+75	+38
τ^2 Aquarii	4	0.45	5.1	14 16.3	10 23.7	- 7 10.8	+0.9285	.5421	.1977	+76	+13
74 Aquarii	6	0.43	4.5	12 18.0	12 14.5	- 5 23.6	-0.7674	.5411	.1993	- 6	-90
ψ^1 Aquarii	4½	0.31	3.7	9 47.3	22 58.7	+ 5 0.0	-1.2170	.5330	.2089	-37	-90
ψ^2 Aquarii	4½	0.29	3.7	9 53.1	23 59.2	+ 5 58.5	-0.9049	.5324	.2097	-13	-90
ψ^3 Aquarii	5	0.29	3.9	10 18.9	9 0 29.7	+ 6 28.0	-0.3457	.5319	.2101	+19	-60
B. A. C. 8214	6½	+0.20	+ 3.1	- 8 10.6	8 40.8	- 9 36.2	-0.8660	.5266	+.2156	- 9	-90
B. A. C. 8274	6½	0.13	2.8	7 5.8	15 12.7	- 3 16.2	-0.5981	.5229	.2190	+ 7	-79
30 Piscium	5	0.06	2.7	6 43.8	22 2.2	+ 3 21.0	+0.5170	.5193	.2220	+71	-13
33 Piscium	5	0.04	2.6	6 25.7	23 46.3	+ 5 2.0	+0.5812	.5184	.2226	+76	- 9
B. A. C. 17	6½	+0.02	2.4	5 57.9	10 2 20.0	+ 7 31.1	+0.6561	.5175	.2234	+82	- 5
B. A. C. 81	6½	-0.06	1.3	2 55.9	9 41.4	- 9 20.5	-0.9497	.5142	.2251	-13	-90
15 Ceti	6½	-0.12	+ 0.7	- 1 12.8	16 48.7	- 2 25.6	-1.1995	.5118	+.2260	-32	-90
20 Ceti	5½	0.20	1.0	- 1 50.7	11 0 42.8	+ 5 14.9	+1.2712	.5098	.2261	+88	+39
26 Ceti, *mult.*	6½	0.24	+ 0.1	+ 0 40.5	6 26.8	+10 49.1	-0.1654	.5085	.2256	+31	-49
29 Ceti	6½	0.26	- 0.1	1 19.1	8 40.4	-11 1.1	-0.3630	.5082	.2253	+21	-61
33 Ceti	6	0.28	0.3	1 45.5	9 3.2	-10 40.8	-0.5319	.5078	.2250	+12	-73
35 Ceti	6½	0.28	0.3	1 47.4	11 6.6	- 8 39.1	-0.3277	.5078	.2250	+23	-59
f Piscium	6	-0.31	- 0.6	+ 2 56.1	13 55.4	- 5 55.0	-0.9436	.5076	+.2225	-12	-87
ν Piscium	4½	0.41	1.2	4 50.0	12 2 35.6	+ 6 23.6	-0.2004	.5070	.2206	+29	-51
64 Ceti	6½	0.54	2.0	7 57.9	18 37.8	- 2 1.3	-0.1637	.5080	.2124	+31	-47
ξ^1 Ceti	4½	0.55	2.1	8 14.4	19 29.8	- 1 10.8	-0.2824	.5083	.2118	+25	-54
B. A. C. 741	6½	0.59	2.2	9 7.7	13 1 37.8	+ 4 46.7	+0.0258	.5091	.2078	+41	-36
ξ Arietis	5½	-0.59	- 2.5	+10 1.4	1 47.1	+ 4 58.8	-0.9294	.5091	+.2077	-12	-80

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JUNE.

STAR'S—					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 755	6	−0.60	− 2.4	+ 9 58.8	13 2 49.2	+ 5 56.2	−0.6673	.5092	+.2071	+ 4	−79
B. A. C. 830	6	0.66	2.4	10 11.3	11 10.6	− 9 56.8	+0.8072	.5111	.2007	+90	+ 7
38 Arietis	5	0.67	2.8	11 54.0	12 26.8	− 8 42.8	−0.8308	.5116	.1995	− 6	−78
B. A. C. 987	6	0.76	2.7	12 33.4	14 2 18.8	+ 4 45.1	+1.1243	.5155	.1868	+90	+31
B. A. C. 1240	6	0.91	3.0	17 49.6	15 3 32.5	+ 5 13.8	−0.3766	.5249	.1564	+19	−52
B. A. C. 1272	6	0.92	2.7	16 59.5	7 10.7	+ 8 45.4	+1.1117	.5264	.1516	+90	+34
MERCURY				+17 42.8	7 34.9	+ 9 8.9	+0.3723	.4704	+.1328	+63	−11
Rumker 1162	6	−0.95	− 2.7	18 6.5	13 53.7	− 8 44.0	+0.8562	.5293	.1417	+90	+17
B. A. C. 1361	6	0.96	2.7	18 44.6	15 34.5	− 7 6.2	+0.3865	.5299	.1391	+64	− 9
ε Tauri	3½	0.97	− 2.6	18 53.5	17 23.0	− 5 21.1	+0.4705	.5305	+.1362	+71	− 4
ω Geminorum	6	1.01	+ 0.8	24 23.8	18 17 51.8	− 7 13.8	−0.5076	.5513	−.0019	+11	−46
44 Geminor.	6	0.99	0.8	22 49.7	19 13.9	− 5 54.5	+1.2218	.5513	.0046	+90	+60
48 Geminor.	6	−0.99	+ 1.1	+24 20.6	22 27.9	− 2 47.0	−0.4787	.5514	−.0119	+13	−45
B. A. C. 2514	6½	0.93	1.8	24 30.7	19 10 43.6	+ 9 3.9	−0.9674	.5516	.0379	−19	−66
84 Geminor.	6½	0.88	1.8	22 40.0	17 7.1	− 8 45.4	+0.7791	.5509	.0511	+90	+23
7 Cancri	6½	0.84	2.0	22 25.9	22 6.0	− 3 56.6	+0.7551	.5504	.0616	+90	+20
μ^1 Cancri	6	0.84	2.2	23 0.1	23 13.1	− 2 51.8	+0.0584	.5503	.0637	+43	−18
μ^2 Cancri	5	0.83	2.0	21 57.4	23 54.8	− 2 11.5	+1.1620	.5503	.0653	+90	+49
γ Cancri	4½	−0.71	+ 2.7	+21 55.9	20 16 21.4	−10 17.9	−0.1613	.5473	−.0979	+31	−33
η Leonis	3½	0.31	2.8	17 23.5	22 8 10.8	+ 4 13.6	−0.5665	.5372	.1666	+ 9	−65
42 Leonis	6	0.23	2.4	15 37.6	15 12.3	+11 1.7	+0.1255	.5356	.1766	+47	−26
B. A. C. 3579	6	0.20	2.3	15 0.1	18 35.7	− 9 41.4	+0.1887	.5347	.1814	+51	−23
i Leonis	6	0.18	2.2	14 47.9	20 14.4	− 8 5.8	+0.1071	.5344	.1834	+46	−28
k Leonis	6	−0.10	2.3	14 52.5	23 3 10.3	− 1 23.1	−1.2767	.5330	.1922	−43	−75
ι Leonis, *mult.*	4	+0.11	+ 1.4	+11 14.4	21 33.6	− 7 34.3	−1.1275	.5305	−.2121	−26	−79
ω Virginis	6½	0.19	0.6	8 50.9	24 4 44.1	− 0 37.3	−0.1432	.5302	.2184	+33	−46
ξ Virginis	5	0.23	0.7	8 58.5	8 5.3	+ 2 37.7	−1.0132	.5300	.2209	−17	−81
ν Virginis	4½	0.23	0.1	7 15.1	8 22.9	+ 2 54.7	+0.7343	.5301	.2214	+90	+ 1
A^1 Virginis	5½	0.25	0.7	8 57.7	9 23.7	+ 3 53.6	−1.2877	.5302	.2221	−42	−81
π Virginis	4½	0.32	+ 0.2	7 20.0	15 45.8	+10 3.7	−1.0035	.5303	.2265	−16	−83
11 Virginis	6	+0.37	0.0	+ 6 31.5	20 17.0	− 9 33.5	−1.1855	.5308	−.2292	−30	−84
B. A. C. 4104	6½	0.38	− 0.7	4 46.3	21 3.6	− 8 48.4	+0.4674	.5308	.2296	+69	−15
c Virginis	5	0.43	0.9	+ 4 1.8	25 1 19.9	− 4 40.1	+0.2536	.5312	.2318	+54	−26
80 Virginis	6	0.87	3.4	− 4 44.4	26 13 20.7	+ 6 11.7	+0.7537	.5427	.2375	+81	0
94 Virginis	6	1.05	4.2	8 16.6	27 3 30.5	− 4 7.0	+1.0058	.5512	.2323	+82	+16
ξ^1 Libræ	6	1.31	4.3	11 22.3	28 0 46.4	− 7 35.5	−0.6651	.5660	.2154	+ 1	−87
o^1 Libræ	6	+1.47	− 4.6	−15 4.9	12 1.4	+ 3 15.0	+0.6850	.5746	−.2017	+75	− 3
o^2 Libræ	6	1.47	4.5	14 40.4	12 52.3	+ 4 3.9	+0.1076	.5754	.2005	+40	−34
ζ^1 Libræ	4	1.51	4.7	16 16.0	15 1.0	+ 6 7.9	+1.2633	.5770	.1974	+74	+42
ζ^3 Libræ	6	1.52	4.7	16 10.0	16 1.2	+ 7 5.9	+0.9672	.5781	.1960	+74	+15
ζ^4 Libræ	6	1.53	4.7	16 24.9	16 56.7	+ 7 59.2	+1.0316	.5786	.1945	+74	+20
γ Libræ	4½	1.53	4.1	14 21.5	18 3.0	+ 9 3.1	−1.2224	.5796	.1928	−42	−90
η Libræ	6	+1.57	− 4.0	−15 15.7	21 32.4	−11 35.5	−0.9892	.5828	−.1871	−23	−90
θ Libræ	4½	1.62	4.0	16 21.0	29 1 27.8	− 7 49.1	−0.6311	.5859	.1802	− 2	−85
49 Libræ	5½	1.64	3.8	16 9.1	4 7.2	− 5 15.9	−1.2990	.5879	.1757	−57	−90
ν^1 Scorpii	7	1.72	4.0	19 6.9	8 39.8	− 0 53.9	+0.8494	.5917	.1668	+71	+ 8
ν^2 Scorpii	4	1.72	4.0	19 7.4	8 40.2	− 0 53.5	+0.8576	.5917	.1668	+71	+ 9
B. A. C. 5408	6½	1.72	3.7	18 12.0	9 44.6	+ 0 8.3	−0.2323	.5925	.1647	+18	−54
ψ Ophiuchi	5	1.77	3.6	19 44.0	13 24.9	+ 3 39.9	+0.6893	.5957	−.1570	+70	− 2
χ Ophiuchi	6	+1.76	− 3.2	−18 9.7	14 35.1	+ 4 47.2	−1.0426	.5963	.1545	−31	−90
B. A. C. 5663	6½	1.87	2.5	20 12.0	30 0 42.2	− 9 30.2	−0.4853	.6035	.1315	+ 1	−72
B. A. C. 5758	6	1.92	2.2	21 23.0	5 30.9	− 4 53.4	+0.0722	.6066	.1195	+29	−35
ξ Ophiuchi	5	1.95	1.5	20 58.3	11 3.5	+ 0 25.3	−0.9552	.6098	.1055	−30	−90
B. A. C. 5866	6	1.96	1.3	21 19.1	12 26.4	+ 1 44.7	−0.7574	.6107	.1013	−17	−90
B. A. C. 5954	6	2.00	0.8	21 49.9	17 38.3	+ 6 43.5	−0.7454	.6132	.0874	−18	−90
58 Ophiuchi	5	+2.00	− 0.5	−21 37.0	30 19 22.4	+ 8 23.2	−1.1015	.6140	−.0823	−43	−90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JULY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Red'ns from 1871.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
4 Sagittarii	5	+2.05	+0.1	-23 48.1	1 1 19.7	- 9 54.8	+0.5972	.6160	-.0660	+57	- 6
B. A. C. 6088	5	2.05	0.3	22 46.5	2 7.4	- 9 9.1	-0.4613	.6162	.0632	- 4	-71
7 Sagittarii	6	2.07	0.2	24 16.7	2 26.1	- 8 51.1	+0.9952	.6164	.0622	+66	+20
9 Sagittarii	4½	2.07	0.2	24 21.6	2 48.5	- 8 29.8	+1.0520	.6166	.0613	+66	+26
B. A. C. 6161	6	2.07	0.7	23 43.6	5 41.2	- 5 44.5	+0.2627	.6174	.0528	+34	-25
24 Sagittarii	6	+2.09	+1.8	-24 7.5	13 45.1	+ 1 58.6	+0.3259	.6183	-.0634	+36	-22
SATURN				22 32.7	14 15.1	+ 2 27.3	-1.2309	.6217	.0272	-61	-90
B. A. C. 6343	6	2.08	2.0	23 36.7	15 26.5	+ 3 35.6	-0.2227	.6184	.0235	+ 5	-54
26 Sagittarii	6	2.09	2.2	23 57.0	16 39.1	+ 4 45.1	+0.0836	.6184	.0200	+21	-35
B. A. C. 6369	6	2.11	2.3	25 8.5	17 42.4	+ 5 45.7	+1.2340	.6184	.0169	+65	+49
ν^1 Sagittarii	5	+2.06	+2.8	-22 54.0	21 9.1	+ 9 3.4	-1.0097	.6182	-.0069	-42	-90
ν^2 Sagittarii	5	2.07	2.8	22 49.7	21 29.6	+ 9 22.9	-1.0824	.6182	.0053	-48	-90
B. A. C. 6448	6	2.08	2.9	23 20.0	21 48.9	+ 9 41.5	-0.5878	.6182	-.0046	-16	-83
B. A. C. 6485	6½	2.07	3.1	22 52.3	23 52.0	+11 39.2	-1.0445	.6180	+.0016	-45	-90
B. A. C. 6490	6½	2.10	3.2	25 1.4	2 0 7.8	+11 54.4	+1.0728	.6180	.0021	+65	+28
B. A. C. 6524	6½	+2.06	+3.4	-22 41.5	1 49.1	-10 28.6	-1.2139	.6177	+.0074	-69	-90
B. A. C. 6576	6	2.09	3.8	24 23.8	4 54.7	- 7 31.0	+0.5026	.6167	.0166	+47	-12
B. A. C. 6607	6	2.06	4.1	22 38.4	7 49.0	- 4 41.5	-1.1926	.6165	.0223	-56	-90
χ^1 Sagittarii	6	2.08	4.4	24 45.3	8 28.3	- 4 6.6	+0.9343	.6157	.0275	+65	+16
χ^2 Sagittarii	6½	2.08	4.4	24 39.8	8 30.7	- 4 4.3	+0.8443	.6157	.0276	+66	+10
χ^3 Sagittarii	6	+2.07	+4.4	-24 12.6	8 34.1	- 4 1.0	+0.3998	.6157	+.0277	+40	-18
B. A. C. 6699	6½	2.05	4.7	23 35.2	12 18.8	- 0 25.9	-0.0922	.6145	.0303	+12	-45
B. A. C. 6727	6½	2.05	5.0	23 43.1	13 57.7	+ 1 8.8	+0.1051	.6136	.0432	+24	-34
B. A. C. 6864	6	1.99	6.0	23 5.3	21 53.3	+ 8 44.3	-0.0863	.6100	.0657	+16	-45
B. A. C. 6878	6½	2.00	6.0	22 57.2	22 46.1	+ 9 34.9	-0.1609	.6091	.0683	+12	-50
4 Capricorni	6	+1.96	+6.6	-22 12.3	3 4 10.1	- 9 14.6	-0.4968	.6062	+.0826	- 4	-74
B. A. C. 7049	6	1.93	7.2	22 48.9	8 32.5	- 5 3.0	+0.4976	.6027	.0945	+52	-12
17 Capricorni	6	1.88	7.8	21 58.7	14 59.1	+ 1 8.0	+0.3248	.5980	.1103	+43	-22
η Capricorni	5½	1.80	8.2	20 21.7	22 11.0	+ 8 2.6	-0.4389	.5922	.1266	+ 3	-68
χ Capricorni	6	1.81	8.6	21 42.4	23 48.8	+ 9 36.6	+1.1223	.5907	.1308	+69	+30
27 Capricorni	6	+1.79	+8.6	-21 4.2	4 0 12.8	+ 9 59.7	+0.5347	.5905	+.1314	+58	-10
ϕ Capricorni	6	1.77	8.8	21 10.9	2 39.4	-11 39.4	+0.9766	.5880	.1370	+69	+18
ε Capricorni	4½	1.67	9.3	20 2.4	11 25.3	- 3 13.7	+1.1089	.5798	.1546	+70	+28
κ Capricorni	5	1.64	9.4	19 27.0	13 44.1	- 1 0.1	+0.8766	.5780	.1588	+71	+10
29 Aqua., *mult.*	6	1.55	9.5	17 34.9	22 6.9	+ 7 4.2	+0.3752	.5702	.1730	+52	-20
56 Aquarii	6	+1.41	+9.6	-15 14.5	5 10 16.7	- 5 12.0	+0.2042	.5591	+.1905	+45	-29
τ^1 Aqua., *mult.*	6	1.32	9.8	14 44.0	18 7.3	+ 2 22.4	+1.2184	.5520	.2000	+75	+36
τ^2 Aquarii	4	1.31	9.7	14 16.2	18 59.1	+ 3 12.4	+0.9141	.5512	.2009	+76	+12
74 Aquarii	6	1.28	9.2	12 17.9	20 46.6	+ 4 56.3	-0.7589	.5497	.2029	- 5	-90
ψ^1 Aquarii	4½	1.16	8.8	9 47.8	6 7 12.4	- 8 58.6	-1.2009	.5413	.2122	-36	-90
ψ^2 Aquarii	4½	+1.15	+8.8	- 9 53.1	8 11.2	- 8 1.7	-0.8927	.5404	+.2130	-12	-90
ψ^3 Aquarii	5	1.15	9.0	10 18.8	8 40.9	- 7 33.0	-0.3410	.5400	.2135	+19	-60
B. A. C. 8214	6½	1.06	8.5	8 10.6	16 38.6	+ 0 9.4	-0.8537	.5341	.2189	- 9	-90
B. A. C. 8274	6½	0.98	8.2	7 5.7	23 0.2	+ 6 19.0	-0.5883	.5300	.2223	+ 7	-79
30 Piscium	5	+0.92	+8.1	- 6 43.7	7 5 39.4	-11 14.2	+0.5143	.5257	.2250	+71	-13
33 Piscium	5	0.91	8.0	6 25.6	7 21.0	- 9 35.6	+0.5781	.5251	+.2255	+76	- 9
B. A. C. 17	6½	0.88	7.9	5 57.8	9 51.0	- 7 10.2	+0.6525	.5232	.2262	+82	- 5
B. A. C. 81	6½	0.81	6.9	- 2 55.8	17 2.2	- 0 12.1	-0.9337	.5199	.2277	-12	-90
15 Ceti	6½	+0.74	+6.4	- 1 12.7	8 0 0.6	+ 6 33.9	-1.2036	.5168	.2283	-32	-90
20 Ceti	5½	0.66	6.6	- 1 50.6	7 45.6	- 9 54.7	+1.2662	.5142	.2282	+88	+38
26 Ceti, *mult.*	6½	0.60	5.7	+ 0 40.6	13 23.5	- 4 26.6	-0.1554	.5125	+.2275	+32	-49
29 Ceti	6½	+0.58	+5.4	+ 1 19.2	15 34.8	- 2 19.1	-0.3494	.5118	+.2270	+22	-60

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JULY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Red'ns from 1871.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
33 Ceti	6	+0.57	+5.5	+ 1 45.6	8 16 56.3	− 0 59.9	−0.5183	.5117	+.2269	+13	−72
35 Ceti	6½	0.56	5.3	1 47.5	17 58.7	+ 0 0.6	−0.3157	.5115	.2266	+23	−58
f Piscium	6	0.53	5.2	2 56.2	20 45.0	+ 2 42.1	−0.7478	.5109	.2259	0	−83
ν Piscium	4½	0.42	4.1	4 50.1	9 9 15.0	− 9 9.4	−0.1881	.5091	.2216	+30	−50
64 Ceti	6½	0.27	3.0	7 58.0	10 1 7.7	+ 6 16.1	−0.1501	.5091	.2130	+32	−47
ξ^1 Ceti	4½	+0.27	+2.9	+ 8 14.5	1 59.3	+ 7 6.1	−0.2680	.5092	+.2124	+26	−53
B. A. C. 728	6½	0.22	2.1	10 14.9	7 23.4	−11 39.0	−1.3317	.5097	.2086	−49	−80
B. A. C. 741	6½	0.21	2.5	9 7.8	8 4.6	−10 58.9	+0.0388	.5097	.2082	+42	−36
ξ Arietis	5½	0.22	2.2	10 1.5	8 13.8	−10 50.0	−0.9114	.5097	+.2081	−10	−80
B. A. C. 755	6	0.21	2.2	9 58.9	9 15.6	− 9 49.9	−0.6507	.5098	.2074	+ 5	−78
B. A. C. 830	6	+0.13	+2.1	+10 11.4	17 34.2	− 1 45.7	+0.8173	.5113	+.2006	+90	+ 8
38 Arietis	5	+0.12	1.5	11 54.1	18 50.1	− 0 31.9	−0.8138	.5116	.1997	− 5	−78
B. A. C. 987	6½	0.00	+1.0	12 33.5	11 8 39.4	−11 6.8	+1.1345	.5149	.1864	+90	+31
B. A. C. 1240	6	−0.21	−0.2	17 49.7	12 9 51.6	−10 39.5	−0.3639	.5236	.1561	+21	−51
B. A. C. 1272	6	0.24	+0.2	16 59.6	13 29.9	− 7 7.8	+1.1207	.5253	.1509	+90	+35
ω^1 Tauri	6	−0.24	−0.5	+19 15.9	14 1.4	− 6 37.3	−1.3213	.5253	+.1504	−62	−71
Rumker 1162	6	0.28	0.2	18 6.5	20 13.0	− 0 37.1	+0.8652	.5280	.1414	+90	+18
B. A. C. 1361	6	0.30	0.3	18 44.6	21 53.9	+ 1 0.7	+0.3962	.5287	.1388	+65	− 8
ε Tauri	3½	0.31	0.4	18 53.5	23 42.4	+ 2 45.8	+0.4799	.5294	.1356	+71	− 3
ι Tauri	5	0.43	0.7	21 24.2	13 16 27.6	− 5 0.5	−0.2564	.5365	.1082	+26	−40
l Tauri	5½	−0.45	−0.3	+20 14.7	18 46.1	− 2 46.5	+1.2750	.5373	+.1043	+90	+60
105 Tauri	6	0.45	0.6	21 32.0	18 47.2	− 2 45.4	−0.1530	.5374	.1043	+31	−33
κ Tauri	6	0.48	0.6	21 57.7	14 0 12.4	+ 2 29.4	−0.0898	.5394	.0948	+35	−29
ο Tauri	6	0.50	0.5	21 49.5	4 11.1	+ 6 20.4	+0.4243	.5411	.0874	+66	− 1
B. A. C. 1774	6½	0.54	0.6	23 14.8	9 38.2	+11 36.9	−0.7058	.5431	.0765	0	−66
141 Tauri	6	−0.60	−0.2	+22 23.7	20 10.2	− 2 11.9	+0.9395	.5465	+.0562	+90	+33
1 Geminorum	5	0.59	0.3	23 16.1	21 16.5	− 1 7.8	+0.0329	.5470	.0541	+42	−18
2 Geminorum	6½	0.60	0.3	23 38.9	22 30.9	+ 0 4.2	−0.3228	.5475	.0512	+22	−36
3 Geminorum	6	0.60	0.2	23 7.9	23 53.2	+ 1 23.7	+0.3174	.5478	.0486	+60	− 3
5 Geminorum	6	0.62	0.3	24 26.7	15 0 41.2	+ 2 10.1	−1.0990	.5479	.0468	−30	−66
6 Geminorum	6	−0.61	−0.1	+22 56.2	1 5.0	+ 2 33.1	+0.5920	.5480	+.0461	+83	+12
η Geminorum	3½	0.61	0.0	22 32.5	2 17.4	+ 3 43.1	+1.0809	.5481	.0438	+90	+44
μ Geminorum	3	0.62	+0.1	22 34.6	6 1.0	+ 7 19.3	+1.1896	.5493	.0360	+90	+54
B. A. C. 2154	6½	0.66	0.1	24 41.6	12 38.2	−10 16.8	−0.9590	.5508	+.0219	−18	−66
η Leonis	3½	0.43	2.9	17 23.5	19 13 47.6	+11 37.8	−0.6210	.5396	−.1681	+ 6	−69
42 Leonis	6	−0.36	+2.9	+15 37.6	20 47.2	− 5 36.1	+0.0665	.5378	−.1781	+44	−29
B. A. C. 3579	6	0.34	2.8	15 0.1	20 0 9.8	− 2 19.9	+0.1277	.5369	.1825	+47	−27
i Leonis	6	0.32	2.8	14 47.9	1 48.2	− 0 44.7	+0.0452	.5364	.1848	+43	−31
k Leonis	6	0.27	2.9	14 52.5	8 43.1	+ 5 57.1	−1.3437	.5344	.1935	−57	−75
ι Leonis, *mult.*	4	0.10	2.4	11 14.4	21 3 7.1	− 0 13.5	−1.2059	.5308	.2125	−33	−79
ω Virginis	6½	−0.04	+1.8	+ 8 50.9	10 19.2	+ 6 45.2	−0.2223	.5299	−.2185	+28	−50
ξ Virginis	5	−0.01	1.9	8 58.5	13 41.6	+10 1.4	−1.0977	.5295	.2212	−23	−81
ν Virginis	4½	0.00	1.4	7 15.1	13 59.3	+10 18.5	+0.6575	.5294	.2213	+86	− 3
A^1 Virginis	5½	+0.01	1.9	8 57.7	15 0.4	+11 17.7	−1.3744	.5294	.2224	−60	−81
π Virginis	4½	+0.07	+1.5	+ 7 20.0	21 25.3	− 6 29.3	−1.0917	.5289	−.2263	−23	−83
11 Virginis	6	0.11	1.3	6 31.5	22 1 59.0	− 2 4.2	−1.2770	.5289	.2288	−40	−84
B. A. C. 4104	6½	0.12	0.8	4 46.3	2 46.5	− 1 18.1	+0.3890	.5289	.2292	+62	−19
σ Virginis	5	0.17	+0.6	+ 4 1.9	7 5.1	+ 2 52.5	+0.1691	.5289	.2317	+50	−31
80 Virginis	6	+0.58	−1.9	− 4 44.3	23 19 43.8	− 9 37.8	+0.6703	.5247	−.2348	+84	− 5
94 Virginis	6	0.77	2.8	8 16.5	24 10 15.0	+ 4 25.1	+0.9279	.5432	.2291	+82	+11
95 Virginis	6	0.77	3.0	8 41.8	10 26.8	+ 4 36.6	+1.3143	.5437	.2290	+82	+45
ξ^1 Libræ	6	+1.06	−3.2	−11 22.3	25 8 8.6	+ 1 34.4	−0.7608	.5439	−.2118	− 5	−90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JULY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
o^1 Libræ	6	+1.24	- 4.0	-15 4.9	25 19 45.4	-11 13.4	+0.6146	.5652	-.1979	+71	- 7
o^2 Libræ	6	1.24	3.8	14 40.4	20 37.9	-10 22.7	+0.0289	.5657	.1966	+50	-38
ζ^1 Libræ	4	1.29	4.2	16 16.0	22 51.7	- 8 13.7	+1.2039	.5674	.1938	+74	+35
ζ^3 Libræ	6	1.30	4.1	16 10.0	23 53.0	- 7 14.6	+0.9034	.5682	.1922	+74	+11
ζ^4 Libræ	6	1.31	4.1	16 24.9	26 0 50.4	- 6 19.3	+0.9696	.5688	.1907	+74	+16
γ Libræ	4½	+1.31	- 3.3	-14 21.5	1 58.8	- 5 13.3	-1.3195	.5698	-.1891	-57	-90
η Libræ	6	1.37	3.4	15 15.6	5 35.1	- 1 44.9	-1.0809	.5728	.1834	-30	-90
θ Libræ	4½	1.43	3.5	16 21.0	9 38.3	+ 2 9.2	-0.7156	.5757	.1768	- 7	-90
ν^1 Scorpii	7	1.55	3.8	19 6.9	17 4.5	+ 9 18.6	+0.7934	.5814	.1636	+71	+ 5
ν^2 Scorpii	4	1.55	3.8	19 7.4	17 4.9	+ 9 19.0	+0.8019	.5814	.1636	+71	+ 5
B. A. C. 5408	6½	+1.56	- 3.5	-18 12.0	18 11.4	+10 23.0	-0.3042	.5824	-.1616	+14	-58
ψ Ophiuchi	5	1.62	3.6	19 44.0	21 59.0	- 9 58.2	+0.6333	.5851	.1540	+67	- 5
χ Ophiuchi	6	1.62	3.0	18 9.7	23 11.3	- 8 48.7	-1.1236	.5863	.1516	-38	-90
B. A. C. 5663	6½	1.78	2.6	20 12.0	27 9 37.6	+ 1 13.1	-0.5502	.5939	.1287	- 3	-78
B. A. C. 5758	6	1.85	2.5	21 23.0	14 35.0	+ 5 58.6	+0.0190	.5973	.1169	+26	-39
ξ Ophiuchi	5	+1.91	- 1.7	-20 58.3	20 17.3	+11 27.1	-1.0179	.6006	-.1032	-34	-90
B. A. C. 5866	6	1.93	1.6	21 19.1	21 42.6	-11 11.1	-0.8160	.6017	.0993	-21	-90
B. A. C. 5954	6	2.00	1.1	21 49.9	28 3 3.1	- 6 3.7	-0.7987	.6045	.0855	-21	-90
58 Ophiuchi	5	2.01	0.9	21 37.0	4 49.9	- 4 21.3	-1.1606	.6055	.0806	-48	-90
4 Sagittarii	5	2.11	0.6	23 48.1	10 56.3	+ 1 29.8	+0.5669	.6083	.0640	+55	- 7
B. A. C. 6088	6	+2.10	- 0.2	-22 46.5	11 45.1	+ 2 16.7	-0.5033	.6087	-.0616	- 7	-74
7 Sagittarii	6	2.13	0.5	24 16.7	12 4.4	+ 2 35.0	+0.9703	.6088	.0609	+66	+19
9 Sagittarii	4½	2.13	0.5	24 21.6	12 27.2	+ 2 56.9	+1.0283	.6088	.0594	+66	+24
B. A. C 6161	6	2.15	- 0.0	23 43.4	15 24.0	+ 5 46.4	+0.2325	.6100	0.511	+32	-27
SATURN				22 40.2	21 11.9	+11 19.6	-1.0641	.6139	.0348	-44	-90
24 Sagittarii	6	+2.22	+ 1.2	-24 7.5	23 38.4	-10 20.0	+0.3036	.6119	-.0276	+34	-23
B. A. C. 6343	6	2.23	1.5	23 36.7	29 1 21.8	- 8 41.0	-0.2486	.6122	.0223	+ 3	-55
26 Sagittarii	6	2.24	1.6	23 57.0	2 35.8	- 7 30.1	+0.0617	.6124	.0189	+20	-37
B. A. C. 6369	6	2.27	1.5	25 8.5	3 40.3	- 6 28.4	+1.2235	.6126	.0158	+65	+46
ν^1 Sagittarii	5	2.26	2.4	22 54.0	7 10.7	- 3 6.9	-1.0366	.6126	.0058	-44	-90
ν^2 Sagittarii	5	+2.26	+ 2.5	-22 49.7	7 31.6	- 2 46.9	-1.1097	.6126	-.0043	-50	-90
B. A. C. 6448	6	2.27	2.5	23 20.0	8 51.2	- 1 27.9	-0.6105	.6128	-.0036	-18	-86
B. A. C. 6485	6½	2.27	2.8	22 52.4	9 56.4	- 0 28.2	-1.0686	.6128	+.0024	-47	-90
B. A. C. 6490	6½	2.31	2.5	25 1.4	10 12.4	- 0 12.9	+1.0661	.6128	.0030	+65	+27
B. A. C. 6524	6½	2.28	3.1	22 41.5	11 55.4	+ 1 25.8	-1.2368	.6128	.0083	-62	-90
B. A. C. 6576	6	+2.32	+ 3.3	-24 23.9	15 3.7	+ 4 26.1	+0.4957	.6125	+.0174	+46	-12
B. A. C. 6607	6	2.30	3.9	22 38.4	16 59.5	+ 6 17.0	-1.2089	.6122	.0231	-58	-90
χ^1 Sagittarii	6	2.34	3.9	24 45.3	18 40.1	+ 7 53.3	+0.9335	.6119	.0282	+65	+16
χ^2 Sagittarii	6½	2.34	3.9	24 39.8	18 42.6	+ 7 55.7	+0.8429	.6119	.0283	+66	+10
χ^3 Sagittarii	6	2.34	4.0	24 12.7	18 46.1	+ 7 59.1	+0.3957	.6119	.0284	+40	-17
B. A. C. 6699	6½	+2.34	+ 4.6	-23 35.2	22 33.4	+11 36.8	-0.0956	.6112	+.0395	+13	-46
B. A. C. 6727	6½	2.35	4.8	23 43.1	30 0 13.4	-10 47.4	+0.1048	.6107	.0438	+24	-34
B. A. C. 6864	6	2.35	6.0	23 5.3	8 13.1	- 3 7.8	-0.0790	.6080	.0664	+16	-45
B. A. C. 6878	6½	2.35	6.1	22 57.2	9 6.3	- 2 16.8	-0.1529	.6076	.0689	+13	-49
4 Capricorni	6	+2.34	+ 7.0	-22 12.2	14 32.1	+ 2 55.5	-0.4836	.6049	+.0840	- 4	-73
B. A. C. 7049	6	2.35	7.5	22 48.9	18 55.3	+ 7 8.0	+0.5180	.6024	.0953	+54	-11
17 Capricorni	6	2.33	8.4	21 58.7	31 1 22.4	-10 40.5	+0.3519	.5986	.1119	+44	-20
η Capricorni	5½	2.29	9.3	20 21.6	8 33.6	- 3 46.5	-0.4034	.5933	.1287	+ 5	-66
χ Capricorni	6	+2.30	+ 9.5	-21 42.4	10 11.1	- 2 12.9	+1.1580	.5924	+.1321	+69	+34
27 Capricorni	6	2.29	9.6	21 4.2	10 35.0	- 1 49.9	+0.5715	.5920	.1333	+61	- 8
φ Capricorni	6	2.29	9.9	21 10.9	13 0.9	+ 0 30.3	+1.0151	.5902	.1384	+69	+21
ε Capricorni	4½	+2.24	+10.8	-20 2.4	21 43.3	+ 8 52.5	+1.1561	.5832	+.1565	+70	+33

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

AUGUST.

STAR'S—					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. *H*	*Y*	*x′*	*y′*	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
κ Capricorni	5	+2.22	+11.0	−19 27.0	1 0 0.9	+11 4.8	+0.9268	.5816	+.1608	+71	+14
29 Aqua., *mult.*	6	2.15	11.6	17 34.8	8 18.4	− 4 56.2	+0.4364	.5745	.1753	+56	−16
50 Aquarii	6	2.07	12.0	14 10.7	17 46.0	+ 4 10.8	−1.2859	.5664	.1901	−50	−90
56 Aquarii	6	2.06	12.3	15 14.4	20 18.2	+ 6 37.6	+0.2800	.5644	.1935	+49	−25
τ^1 Aqua., *mult.*	6	2.00	12.8	14 43.9	2 4 1.1	− 9 55.7	+1.2951	.5580	.2032	+76	+46
τ^2 Aquarii	4	1.99	12.7	14 16.1	4 52.0	− 9 6.6	+0.9943	.5572	.2042	+76	+17
74 Aquarii	6	+1.96	+12.5	−12 17.9	6 37.6	− 7 24.6	−0.6643	.5553	+.2062	0	−88
ψ^1 Aquarii	4½	1.88	12.5	9 47.2	16 51.6	+ 2 28.6	−1.0912	.5478	.2159	−26	−90
ψ^2 Aquarii	4½	1.87	12.6	9 53.0	17 49.2	+ 3 24.4	−0.7843	.5470	.2166	− 5	−90
ψ^3 Aquarii	5	1.87	12.7	10 18.7	18 18.3	+ 3 52.5	−0.2367	.5468	.2170	+25	−54
B. A. C. 8214	6½	1.80	12.5	8 10.5	3 2 6.0	+11 24.8	−0.7365	.5410	.2224	− 1	−90
B. A. C. 8274	6½	1.74	12.5	7 5.6	8 19.4	− 6 33.8	−0.4673	.5369	.2259	+14	−69
30 Piscium	5	+1.69	+12.6	− 6 43.6	14 49.7	− 0 15.9	+0.6307	.5327	+.2286	+79	− 7
33 Piscium	5	1.67	12.5	6 25.6	16 29.1	+ 1 20.4	+0.6950	.5316	.2292	+84	− 3
B. A. C. 17	6½	1.65	12.4	5 57.7	18 55.7	+ 3 42.4	+0.7709	.5304	.2299	+77	+ 1
B. A. C. 81	6½	1.59	11.7	2 55.7	4 1 57.3	+10 31.0	−0.7941	.5267	.2314	− 3	−90
14 Ceti	6½	1.54	11.3	1 12.7	7 28.9	− 8 7.5	−1.3280	.5238	.2317	−46	−90
15 Ceti	6½	1.53	11.3	1 12.6	8 46.2	− 6 52.6	−1.0325	.5235	.2319	−18	−90
20 Ceti	5½	+1.46	+11.5	− 1 50.5	16 21.0	+ 0 28.5	+1.3948	.5206	+.2316	+88	+66
26 Ceti, *mult.*	6½	1.42	10.7	+ 0 40.6	21 51.6	+ 5 49.3	−0.0099	.5187	.2307	+39	−41
29 Ceti	6½	1.40	10.5	1 19.2	5 0 0.0	+ 7 53.9	−0.2024	.5180	.2302	+29	−52
33 Ceti	6	1.39	10.4	1 45.7	1 19.8	+ 9 11.3	−0.3675	.5176	.2299	+21	−62
35 Ceti	6½	1.38	10.4	1 47.5	2 20.9	+10 10.6	−0.1665	.5174	.2297	+31	−49
f Piscium	6	1.36	10.4	2 56.3	6 3.7	−10 11.3	−0.7700	.5169	.2290	− 1	−78
ν Piscium	4½	+1.25	+ 9.2	+ 4 50.2	17 18.8	+ 0 42.2	−0.0338	.5144	+.2241	+38	−41
64 Ceti	6½	1.12	7.8	7 58.0	6 8 54.7	− 8 9.3	+0.0066	.5131	.2147	+40	−38
ξ^1 Ceti	4½	1.11	7.8	8 14.5	9 45.5	− 7 20.0	−0.1104	.5132	.2141	+34	−44
B. A. C. 728	6½	1.07	7.7	10 15.0	15 4.5	− 2 10.2	−1.1655	.5132	.2102	−29	−80
B. A. C. 741	6½	1.06	7.2	9 7.8	15 45.1	− 1 30.8	+0.1944	.5132	.2096	+51	−27
ξ Arietis	5½	1.06	7.5	10 1.6	15 54.2	− 1 22.0	−0.7489	.5133	.2096	− 1	−78
B. A. C. 755	6	+1.05	+ 7.3	+ 9 59.0	16 55.1	− 0 22.9	−0.4899	.5133	+.2087	+14	−67
B. A. C. 830	6	0.98	6.1	10 11.4	7 1 6.8	+ 7 34.5	+0.9672	.5140	.2018	+90	+17
38 Arietis	5	0.97	6.5	11 54.2	2 21.7	+ 8 47.3	−0.6530	.5144	.2008	+ 5	−76
B. A. C. 987	6½	0.85	4.7	12 33.5	16 1.8	− 1 56.7	+1.2809	.5168	.1869	+90	+47
B. A. C. 1240	6	0.63	3.2	17 49.7	8 17 2.8	− 1 40.8	−0.2200	.5209	.1549	+28	−43
B. A. C. 1272	6	0.59	3.3	16 59.6	20 40.0	+ 1 49.9	+1.2569	.5252	.1505	+90	+50
ω^1 Tauri	6	+0.60	+ 2.5	+19 16.0	21 11.4	+ 2 20.3	−1.1763	.5253	+.1499	−34	−71
Rumker 1162	6	0.53	2.8	18 6.6	9 3 21.5	+ 8 19.0	+0.9982	.5275	.1408	+90	+27
B. A. C. 1361	6	0.52	2.6	18 44.7	5 2.1	+ 9 56.6	+0.5299	.5282	.1381	+76	− 1
ε Tauri	3½	0.50	2.5	18 53.6	6 50.0	+11 41.1	+0.6122	.5289	.1352	+84	+ 4
ι Tauri	5	0.35	1.3	21 24.2	23 33.3	+ 3 52.8	−0.1342	.5354	.1073	+32	−33
105 Tauri	6	0.33	1.3	21 32.0	10 1 52.8	+ 6 7.8	−0.0331	.5363	.1034	+37	−26
π Tauri	6	+0.28	+ 1.1	+21 57.7	7 17.6	+11 22.2	+0.0235	.5396	+.0900	+41	−22
ο Tauri	6	0.25	1.1	21 49.5	11 16.3	− 8 46.8	+0.5346	.5398	.0864	+77	+ 5
B. A. C. 1774	6½	0.20	0.6	23 14.8	16 43.3	− 3 30.4	−0.5983	.5419	.0757	+ 6	−59
141 Tauri	6	0.11	0.8	22 23.7	11 3 15.1	+ 6 40.6	+1.0332	.5451	.0551	+90	+40
1 Geminorum	5	0.10	0.5	23 16.1	4 21.4	+ 7 44.7	+0.1274	.5456	.0530	+47	−13
2 Geminorum	6½	0.09	0.4	23 38.9	5 45.8	+ 9 6.7	−0.2286	.5460	.0492	+27	−32
3 Geminorum	6	+0.08	+ 0.5	+23 7.9	6 58.0	+10 16.1	+0.4087	.5465	+.0475	+67	+ 2
5 Geminorum	6	0.07	0.2	24 26.7	7 46.0	+11 2.5	−1.0060	.5468	.0458	−22	−66
6 Geminorum	6	0.07	0.6	22 56.1	8 10.2	+11 25.9	+0.6817	.5468	.0451	+90	+18
η Geminorum	3½	0.06	0.7	22 32.5	9 22.2	−11 24.4	+1.1682	.5471	.0423	+90	+52
μ Geminorum	3	+0.03	0.7	22 34.6	13 5.7	− 7 48.4	+1.2723	.5481	.0349	+90	+66
B. A. C. 2154	6½	−0.02	+ 0.1	+24 41.6	19 42.7	− 1 24.7	−0.8790	.5498	+.0208	−12	−66

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

AUGUST.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 2238	6	−0.07	+ 0.5	+23 45.1	12 2 24.1	+ 5 3.2	+0.2510	.5513	+.0064	+55	− 2
ω Geminorum	6	0.11	0.3	24 23.8	7 7.9	+ 9 37.3	−0.4576	.5521	−.0034	+14	−42
44 Geminor.	6½	0.11	0.6	22 49.7	8 20.4	+10 56.1	+1.2674	.5523	.0070	+90	+66
48 Geminor.	6	0.14	0.3	24 20.6	11 42.1	− 9 57.7	−0.4301	.5528	.0135	+16	−42
B. A. C. 2514	6½	0.21	0.4	24 30.7	23 51.4	+ 1 46.7	−0.9369	.5537	.0398	−16	−66
κ Gemi., *mult.*	3½	0.22	0.4	24 42.3	13 2 14.3	+ 4 4.7	−1.2491	.5537	.0447	−52	−66
84 Geminor.	6½	−0.24	+ 0.8	+22 40.0	6 10.9	+ 7 53.3	+0.7885	.5539	−.0529	+90	+23
7 Cancri	6½	0.26	0.9	22 25.9	11 6.3	−11 21.3	+0.7549	.5539	.0637	+90	+20
μ¹ Cancri	6	0.27	0.8	23 0.1	12 12.6	−10 17.3	+0.0607	.5539	.0660	+44	−18
μ² Cancri	5	0.27	1.0	21 57.4	12 53.8	− 9 37.5	+1.1561	.5537	.0676	+90	+48
γ Cancri	4½	0.32	1.3	21 55.9	14 5 6.8	+ 6 2.6	−0.1905	.5522	.1010	+29	−35
ι Leonis, *mult.*	4	0.20	2.3	11 14.4	17 9 7.1	+ 7 33.9	−1.3170	.5351	.2157	−47	−79
ω Virginis	6½	−0.16	+ 2.0	+ 8 50.9	16 13.9	− 9 32.7	−0.3492	.5338	−.2217	+21	−58
ξ Virginis	5	0.15	2.1	8 58.5	19 33.9	− 6 19.0	−1.2252	.5333	.2243	−34	−81
ν Virginis	4½	0.14	1.8	7 15.2	19 51.4	− 6 2.0	+0.5212	.5333	.2245	+73	−11
π Virginis	4½	0.10	1.9	7 20.0	18 3 12.4	+ 1 5.1	−1.2311	.5327	.2292	−35	−83
B. A. C. 4104	6½	0.06	1.5	4 46.4	8 29.8	+ 6 12.6	+0.2335	.5325	.2321	+53	−27
c Virginis	5	−0.04	+ 1.3	+ 4 1.9	12 46.5	+10 21.2	+0.0125	.5327	.2339	+41	−39
65 Virginis	6	+0.22	− 0.5	− 4 14.9	19 19 22.2	− 8 0.8	+1.3599	.5360	−.2374	+86	+52
80 Virginis	6	0.27	0.6	4 44.3	20 1 13.4	− 2 20.8	+0.4795	.5375	.2359	+69	−15
94 Virginis	6	0.43	1.5	8 16.5	15 46.3	+11 43.7	+0.7315	.5426	.2293	+81	− 1
95 Virginis	6	0.43	1.6	8 41.8	15 58.3	+11 55.4	+1.1189	.5427	.2292	+82	+25
ξ¹ Libræ	6	0.69	2.1	11 22.3	21 13 50.4	+ 9 3.6	−0.9692	.5536	.2107	−18	−90
o¹ Libræ	6	0.86	3.0	15 4.9	22 1 36.7	− 3 34.6	+0.4188	.5605	.1962	+58	−17
o² Libræ	6	+0.87	− 2.8	−14 40.4	2 30.0	− 2 43.2	−0.1718	.5612	−.1949	+25	−50
ζ¹ Libræ	4	0.90	3.3	16 16.0	4 45.2	− 0 32.8	+1.0141	.5626	.1918	+74	+19
ζ³ Libræ	6	0.92	3.2	16 10.0	5 48.4	+ 0 28.2	+0.7114	.5631	.1902	+74	− 1
ζ⁴ Libræ	6	0.93	3.3	16 24.8	6 46.7	+ 1 24.4	+0.7787	.5636	.1889	+74	+ 3
η Libræ	6	0.99	2.6	15 15.6	11 36.7	+ 6 4.0	−1.2885	.5669	.1813	−52	−90
θ Libræ	4½	1.06	2.8	16 21.0	15 44.6	+10 2.9	−0.9175	.5695	.1746	−19	−90
ν¹ Scorpii	7	+1.18	− 3.4	−19 6.9	23 20.2	− 6 38.2	+0.6115	.5744	−.1614	+66	− 7
ν² Scorpii	4	1.18	3.4	19 7.4	23 20.6	− 6 37.8	+0.6199	.5744	.1614	+67	− 6
B. A. C. 5408	6½	1.19	3.0	18 12.0	23 0 28.7	− 5 32.2	−0 4977	.5754	.1588	+ 4	−73
ψ Ophiuchi	5	1.26	3.3	19 44.0	4 21.4	− 1 48.2	+0.4537	.5777	.1517	+55	−16
B. A. C. 5663	6½	1.43	2.6	20 12.0	16 17.5	+ 9 40.6	−0.7345	.5852	.1265	−12	−90
B. A. C. 5758	6	1.52	2.6	21 23.0	21 22.9	− 9 25.9	−0.1530	.5886	.1143	+17	−49
ξ Ophiuchi	5	+1.60	− 1.9	−20 58.3	24 3 14.6	− 3 48.0	−1.1976	.5916	−.1007	−50	−90
B. A. C. 5866	6	1.62	1.9	21 19.2	4 42.2	− 2 23.8	−0.9917	.5924	.0968	−32	−90
B. A. C. 5954	6	1.71	1.5	21 50.0	10 11.9	+ 2 52.7	−0.9680	.5950	.0833	−32	−90
4 Sagittarii	5	1.85	1.3	23 48.1	18 18.9	+10 40.1	+0.4263	.5983	.0619	+45	−16
B. A. C. 6088*	6	1.84	0.8	22 46.5	19 9.2	+11 28.3	−0.6577	.5985	.0597	−15	−90
7 Sagittarii	6	1.87	1.3	24 16.8	19 29.0	+11 47.3	+0.8368	.5990	.0584	+66	+ 9
9 Sagittarii	4½	+1.88	− 1.3	−24 21.7	19 52.5	−11 50.1	+0.8958	.5990	−.0576	+66	+13
B. A. C. 6161	6	1.91	0.7	23 43.5	22 54.5	− 8 55.4	+0.0929	.6001	.0494	+24	−35
B. A. C. 6217	6½	1.97	− 0.6	24 58.2	25 2 38.6	− 5 20.5	+1.1800	.6009	.0389	+65	+39
SATURN				22 45.7	3 4.8	− 4 55.4	−1.0593	.6022	.0378	−43	−90
24 Sagittarii	6	2.02	+ 0.2	24 7.5	7 23.6	− 0 47.2	+0.1768	.6022	.0255	+27	−30
B. A. C. 6343	6	2.04	0.6	23 36.7	9 10.1	+ 0 55.0	−0.3809	.6024	.0211	− 4	−65
26 Sagittarii	6	+2.06	+ 0.7	−23 57.0	10 26.2	+ 2 7.9	−0.0643	.6026	−.0170	+13	−44
B. A. C. 6369	6	2.09	0.5	25 8.5	11 32.6	+ 3 11.7	+1.1153	.6027	.0140	+65	+32
ν¹ Sagittarii	5	2.10	1.6	22 54.0	15 9.2	+ 6 39.4	−1.1711	.6031	.0043	−55	−90
ν² Sagittarii	5	2.10	1.6	22 49.7	15 30.7	+ 6 59.9	−1.2445	.6031	.0028	−63	−90
B. A. C. 6448	6	2.11	1.5	23 20.0	15 50.9	+ 7 19.4	−0.7379	.6031	−.0021	−25	−90
B. A. C. 6485	6½	+2.13	+ 1.9	−22 52.4	17 59.7	+ 9 22.8	−1.1992	.6032	+.0039	−58	−90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

AUGUST.

STAR'S—					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. $\Delta\alpha$	$\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 6490	6½	+2.16	+ 1.4	−25 1.4	25 18 16.2	+ 9 38.6	+0.9654	.6032	+.0045	+65	+19
B. A. C. 6576	6	2.21	2.2	24 23.9	23 15.9	− 9 33.9	+0.3948	.6030	.0186	+39	−18
χ^1 Sagittarii	6	2.25	2.7	24 45.3	26 2 58.4	− 6 0.5	+0.8439	.6027	.0292	+65	+ 9
χ^2 Sagittarii	6½	2.25	2.7	24 39.8	3 0.9	− 5 58.1	+0.7523	.6027	.0293	+66	+ 4
χ^3 Sagittarii	6	2.24	2.8	24 12.7	3 4.4	− 5 54.7	+0.2993	.6026	.0294	+34	−23
B. A. C. 6699	6½	2.27	3.5	23 35.2	6 58.1	− 2 10.6	−0.1920	.6021	.0404	+ 8	−52
h^1 Sagittarii	6	+2.29	+ 3.2	−24 59.9	7 5.1	− 2 3.9	+1.2317	.6021	+.0406	+65	+47
B. A. C. 6727	6½	2.29	3.7	23 43.1	8 40.8	− 0 32.1	+0.0137	.6017	.0453	+19	−39
B. A. C. 6864	6	2.34	5.0	23 5.3	16 53.1	+ 7 20.1	−0.1583	.5995	.0675	+12	−49
B. A. C. 6878	6½	2.35	5.2	22 57.2	17 47.7	+ 8 12.6	−0.2315	.5992	.0700	+10	−54
4 Capricorni	6	2.37	6.1	22 12.3	23 21.4	−10 27.3	−0.5562	.5975	.0843	− 7	−79
B. A. C. 7049	6	2.41	6.6	22 48.9	27 3 50.8	− 6 8.6	+0.4649	.5953	.0961	+50	−14
17 Capricorni	6	+2.43	+ 7.6	−21 58.7	10 26.3	+ 0 11.2	+0.3092	.5918	+.1125	+43	−23
η Capricorni	5½	2.44	8.8	20 21.7	17 46.1	+ 7 13.9	−0.4389	.5876	.1294	+ 3	−68
χ Capricorni	6	2.46	8.8	21 42.4	19 25.4	+ 8 49.4	+1.1397	.5867	.1333	+69	+32
27 Capricorni	6	2.45	9.0	21 4.2	19 49.7	+ 9 12.8	+0.5488	.5865	.1340	+59	−10
ϕ Capricorni	6	2.46	9.3	21 10.9	22 18.2	+11 35.6	+1.0012	.5852	.1391	+69	+20
ϵ Capricorni	4½	2.46	10.5	20 2.4	28 7 8.9	− 3 53.9	+1.1598	.5792	.1572	+70	+33
κ Capricorni	5	+2.46	+10.8	−19 27.0	9 28.4	− 1 39.6	+0.9333	.5774	+.1620	+71	+14
29 Aqua., *mult.*	6	2.44	11.8	17 34.8	17 51.9	+ 6 25.4	+0.4569	.5716	.1768	+58	−15
50 Aquarii	6	2.40	12.9	14 10.7	29 3 24.6	− 8 22.6	−1.2537	.5646	.1918	−45	−90
56 Aquarii	6	2.41	13.1	15 14.4	5 57.8	− 5 54.8	+0.3250	.5629	.1952	+52	−22
τ^1 Aqua., *mult.*	6	2.39	13.7	14 43.9	13 42.9	+ 1 34.1	+1.3593	.5572	.2056	+76	+65
τ^2 Aquarii	4	2.38	13.8	14 16.1	14 33.9	+ 2 23.3	+1.0600	.5569	.2062	+76	+21
74 Aquarii	6	+2.36	+13.9	−12 17.8	16 19.8	+ 4 5.7	−0.5987	.5557	+.2080	+ 4	−81
ψ^1 Aquarii	4½	2.32	14.5	9 47.2	30 2 34.3	−10 0.7	−1.0021	.5484	.2183	−19	−90
ψ^2 Aquarii	4½	2.31	14.5	9 53.0	3 31.8	− 9 5.0	−0.6931	.5479	.2191	0	−90
ψ^3 Aquarii	5	2.31	14.6	10 18.7	4 0.9	− 8 37.0	−0.1443	.5477	.2195	+29	−48
B. A. C. 8214	6½	2.28	14.8	8 10.4	11 47.4	− 1 5.7	−0.6268	.5428	.2252	+ 5	−83
B. A. C. 8274	6½	2.25	14.9	7 5.6	17 58.8	+ 4 53.6	−0.3443	.5391	.2289	+21	−60
30 Piscium	5	+2.22	+15.1	− 6 43.6	31 0 26.8	+11 9.2	+0.7645	.5354	+.2318	+78	+ 1
33 Piscium	5	2.21	15.1	6 25.5	2 5.4	−11 15.3	+0.8320	.5347	.2323	+84	+ 5
B. A. C. 17	6½	2.20	15.2	5 57.7	4 30.8	− 8 54.4	+0.9122	.5335	.2331	+84	+10
B. A. C. 81	6½	2.16	14.9	2 55.7	11 28.5	− 2 9.7	−0.6342	.5302	.2347	+ 6	−83
14 Ceti	6½	2.14	14.7	1 12.7	16 56.5	+ 3 8.1	−1.1553	.5277	.2353	−27	−90
15 Ceti	6½	+2.13	+14.7	− 1 12.5	18 12.9	+ 4 22.2	−0.8588	.5273	+.2353	−31	−90
					SEPTEMBER.						
26 Ceti, *mult.*	6½	+2.06	+14.3	+ 0 40.7	1 7 8.3	− 7 6.0	+0.1821	.5244	+.2343	+50	−30
29 Ceti	6½	2.05	14.2	1 19.3	9 15.1	− 5 3.1	−0.0060	.5224	.2337	+40	−41
33 Ceti	6	2.04	14.1	1 45.8	10 33.7	− 3 46.8	−0.1683	.5220	.2334	+31	−49
35 Ceti	6½	2.03	14.1	1 47.6	11 34.0	− 2 48.4	+0.0333	.5219	.2331	+42	−38
f Piscium	6	2.02	13.8	2 56.3	14 14.4	− 0 12.7	−0.5623	.5212	.2324	+10	−76
B. A. C. 408	6½	2.01	13.6	5 4.0	16 44.3	+ 2 12.7	−1.1852	.5205	.2314	−30	−86
ν Piscium	4½	+1.95	+13.1	+ 4 50.2	2 2 18.6	+11 29.8	+0.1863	.5187	+.2273	+51	−30
64 Ceti	6½	1.86	12.0	7 58.1	17 40.1	+ 2 24.1	+0.2434	.5177	.2177	+54	−26
ξ^1 Ceti	4½	1.86	11.9	8 14.6	18 30.2	+ 3 12.6	+0.1279	.5177	.2171	+47	−31
B. A. C. 728	6½	1.83	11.1	10 15.1	23 44.3	+ 8 17.5	−0.9162	.5177	.2129	−10	−80
B. A. C. 741	6½	1.82	11.4	9 7.9	3 0 24.2	+ 8 56.2	+0.4359	.5177	.2123	+67	−15
ξ Arietis	5½	+1.82	+11.1	+10 1.7	0 33.2	+ 9 4.9	−0.5012	.5177	+.2123	+14	−68
B. A. C. 755	6	1.82	11.1	9 59.1	1 33.2	+10 3.1	−0.2431	.5177	.2113	+27	−51
31 Arietis	5½	1.79	10.3	11 53.4	6 34.4	− 9 4.5	−1.2598	.5177	.2069	−39	−78
B. A. C. 830	6	1.76	10.7	10 11.5	9 37.6	− 6 6.8	+1.2114	.5181	.2042	+90	+37
38 Arietis	5	+1.76	+10.1	+11 54.3	10 51.5	− 4 55.1	−0.3986	.5183	+.2029	+19	−59

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

SEPTEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. $\Delta\alpha$	$\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m s				°	°
B. A. C. 1240	6	+1.48	+6.3	+17 49.8	5 1 4.9	+ 8 9 9	+0.0413	.5258	+.1563	+43	-29
ω^1 Tauri	6	1.46	5.6	19 16.0	5 11.4	-11 51 56	-0.9120	.5271	.1503	-12	-71
Rumker 1162	6	1.39	5.6	18 6.6	11 18.7	- 5 56 3	+1.2534	.5286	.1408	+90	+51
B. A. C. 1361	6	1.38	5.3	18 44.7	12 58.6	- 4 19 18	+0.7863	.5292	.1381	+90	+14
ε Tauri	3½	1.36	5.2	18 53.6	14 46.0	- 2 35 12	+0.8678	.5298	.1353	+90	+19
ι Tauri	5	1.22	3.4	21 24.2	6 7 24.5	-10 28 19	+0.1162	.5353	.1071	+47	-19
105 Tauri	6	+1.19	+3.2	+21 32.0	9 43.3	- 8 13 55	+0.2157	.5359	+.1028	+53	-14
κ Tauri	6	1.14	2.7	21 57.8	15 7.5	- 3 0 10	+0.2705	.5378	.0929	+57	-10
ο Tauri	6	1.10	2.6	21 49.5	19 5.7	+ 0 50 19	+0.7764	.5389	.0854	+90	+19
121 Tauri	6	1.08	1.6	23 57.0	22 43.8	+ 4 21 20	-1.2779	.5400	.0784	-57	-66
B. A. C. 1774	6½	1.05	1.8	23 14.8	7 0 32.4	+ 6 6 20	-0.3595	.5405	.0750	+20	-42
141 Tauri	6	0.94	1.6	22 23.7	11 4.4	- 7 42 27	+1.2618	.5437	.0540	+90	+62
1 Geminorum	5	+0.93	+1.2	+23 16.1	12 10.7	- 6 38 13	+0.3553	.5439	+.0517	+63	0
2 Geminorum	6½	0.92	1.1	23 38.9	13 25.2	- 5 26 15	-0.0021	.5441	.0492	+40	-19
3 Geminorum	6	0.90	1.2	23 7.9	14 47.6	- 4 6 36	+0.6336	.5445	.0464	+88	+15
5 Geminorum	6	0.90	0.7	24 26.7	15 35.6	- 3 20 8	-0.7811	.5446	.0447	- 5	-66
6 Geminorum	6	0.89	1.1	22 56.1	15 59.8	- 2 56 47	+0.9055	.5448	.0439	+90	+31
B. A. C. 2554	6½	0.77	+0.1	24 41.6	8 3 33.8	+ 8 14 3	-0.6558	.5475	.0197	+ 3	-59
ε Geminorum	3½	+0.74	-0.2	+25 15.4	6 31.4	+11 5 45	-1.2382	.5482	+.0134	-49	-65
B. A. C. 2238	6	0.70	+0.1	23 45.1	10 16.4	- 9 16 52	+0.4547	.5489	+.0054	+71	+ 9
ω Geminorum	6	0.65	-0.2	24 23.8	15 1.0	- 4 41 52	-0.2544	.5494	-.0048	+26	-29
48 Geminor.	6	0.60	0.4	24 20.5	19 36.1	- 0 16 2	-0.2384	.5499	.0147	+26	-29
52 Geminor.	6	0.60	0.6	25 6.3	20 36.4	+ 0 42 14	-1.0919	.5501	.0169	-30	-65
B. A. C. 2514	6½	0.48	0.8	24 30.7	9 7 47.8	+11 30 55	-0.7619	.5510	.0410	- 4	-66
κ Gemi., *mult.*	3½	+0.46	-0.9	+24 42.3	10 11.2	-10 10 34	-1.0775	.5510	-.0462	-28	-65
84 Geminor.	6½	0.41	0.4	22 40.0	14 8.5	- 6 21 41	+0.9532	.5512	.0547	+90	+33
7 Cancri	6½	0.36	0.5	22 25.9	19 4.8	- 1 35 5	+0.9120	.5513	.0652	+90	+29
μ^1 Cancri	6	0.35	0.6	23 0.1	20 11.2	- 0 30 55	+0.2162	.5512	.0676	+53	-10
γ Cancri	4½	+0.21	-0.6	21 55.9	10 13 7.3	- 8 9 12	-0.0638	.5505	.1027	+37	-28
η Leonis	6½	-0.04	+0.1	17 23.4	12 4 11.1	+ 5 36 32	-0.6266	.5441	.1733	+ 6	-69
42 Leonis	6	-0.06	+0.4	+15 37.5	11 2.8	-11 45 16	+0.0273	.5429	-.1837	+42	-32
B. A. C. 3579	6	0.07	0.5	15 0.1	14 21.3	- 8 33 14	+0.0749	.5423	.1884	+44	-30
i Leonis	6	-0.08	+0.5	+14 47.8	15 57.6	- 7 0 5	-0.0125	.5420	.1906	+39	-35
65 Virginis	6	+0.02	0.0	- 4 14.9	16 1 52.8	+ 0 17 15	+1.1771	.5419	.2421	+86	+29
66 Virginis	6	0.02	0.0	4 29.3	2 27.0	+ 0 50 26	+1.2847	.5419	.2419	+86	+40
80 Virginis	6	0.05	0.0	4 44.3	7 37.1	+ 5 50 22	+0.2935	.5434	.2405	+57	-25
94 Virginis	6	+0.14	-0.7	- 8 16.5	21 53.4	- 4 21 37	+0.5195	.5482	-.2333	+70	-13
95 Virginis	6	0.15	0.8	8 41.8	22 5.2	- 4 10 13	+0.9034	.5482	.2332	+82	+ 9
κ Virginis	4½	0.17	1.0	9 40.4	17 0 54.3	- 1 26 51	+1.2448	.5494	.2313	+81	+36
ξ^1 Libræ	6	0.33	1.2	11 22.3	19 35.8	- 7 23 38	-1.1978	.5577	.2136	-36	-90
o^1 Libræ	6	0.46	2.0	15 4.9	18 7 13.0	+ 3 49 6	+0.1722	.5636	.1985	+44	-30
o^2 Libræ	6	0.47	1.9	14 40.3	8 5.8	+ 4 39 57	-0.4167	.5643	.1972	+12	-66
ζ^1 Libræ	4	+0.50	-2.3	-16 15.9	10 19.5	+ 6 48 54	+0.7634	.5654	-.1938	+70	+ 2
B. A. C. 5099	7	0.51	2.4	16 48.5	11 8.9	+ 7 36 31	+1.1553	.5659	.1926	+73	+30
ζ^3 Libræ	6	0.51	2.2	16 10.0	11 22.0	+ 7 49 11	+0.4613	.5661	.1923	+60	-15
ζ^4 Libræ	6	0.52	2.3	16 24.8	12 19.8	+ 8 44 54	+0.5280	.5666	.1907	+64	-12
θ Libræ	4½	0.63	2.1	16 21.0	21 13.2	- 6 41 5	-1.1684	.5714	.1759	-38	-90
β^1 Scorpii	2	0.70	2.9	19 27.1	19 2 2.3	- 2 2 39	+1.1463	.5741	.1671	+71	+30
β^2 Scorpii	5½	+0.70	-2.8	-19 26.9	2 2.5	- 2 2 31	+1.1429	.5741	-.1671	+71	+30
ν^1 Scorpii	7	0.73	2.6	19 6.9	4 46.3	+ 0 35 13	+0.3555	.5757	.1619	+50	-21
ν^2 Scorpii	4	0.73	2.7	19 7.4	4 46.7	+ 0 35 36	+0.3641	.5757	.1619	+50	-20
B. A. C. 5408	6½	0.74	2.3	18 12.0	5 54.4	+ 1 40 49	-0.7527	.5761	.1597	-11	-90
ψ Ophiuchi	5	0.80	2.6	19 44.0	9 46.4	+ 5 24 4	+0.1976	.5784	.1520	+40	-29
ω Ophiuchi	5	+0.86	-3.0	-21 11.3	13 2.2	+ 8 32 27	+1.1855	.5799	-.1452	+69	+36

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

SEPTEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m s				°	°
B. A. C. 5663	6½	+0.97	- 2.2	-20 12.0	19 21 42.2	- 7 7 27	-0.9919	.5847	-.1262	-30	-90
B. A. C. 5758	6	1.05	2.3	21 23.0	20 2 48.3	- 2 13 7	-0.4086	.5870	.1142	+ 4	-66
B. A. C. 5866	6	1.16	1.9	21 19.2	10 9.9	+ 4 51 11	-1.2485	.5898	.0963	-57	-90
c² Ophiuchi	5	1.22	2.5	23 51.6	12 45.8	+ 7 20 53	+1.0817	.5909	.0898	+66	+28
B. A. C. 5954	6	1.24	1.6	21 50.0	15 42.0	+10 10 8	-1.2235	.5919	.0823	-55	-90
4 Sagittarii	5	1.38	1.7	23 48.1	23 53.8	- 5 57 40	+0.1830	.5940	.0608	+30	-30
B. A. C. 6088	6	+1.39	- 1.2	-22 46.5	21 0 44.6	- 5 8 49	-0.9067	.5942	-.0585	-31	-90
7 Sagittarii	6	1.41	1.7	24 16.8	1 4.7	- 4 49 36	+0.5967	.5942	.0576	+56	- 6
9 Sagittarii	4½	1.41	1.7	24 21.7	1 28.5	- 4 26 44	+0.6567	.5942	.0566	+61	- 3
B. A. C 6161	6	1.45	1.2	23 43.5	4 32.8	- 1 29 50	-0.1489	.5952	.0483	+11	-49
B. A. C. 6217	6½	1.52	1.7	24 58.2	8 19.8	+ 2 8 5	+0.9491	.5957	.0380	+65	+17
SATURN				22 49.6	8 51.0	+ 2 38 3	-1.2416	.5947	.0367	-60	-90
24 Sagittarii	6	+1.59	- 0.6	-24 7.5	13 9.0	+ 6 45 42	-0.0578	.5965	-.0248	+14	-44
B. A. C. 6343	6	1.61	0.2	23 36.7	14 57.2	+ 8 29 31	-0.6183	.5965	.0198	-17	-87
26 Sagittarii	6	1.63	0.2	23 57.1	16 14.6	+ 9 43 46	-0.2980	.5965	.0163	0	-59
B. A. C. 6369	6	1.66	- 0.5	25 8.5	17 22.1	+10 48 36	+0.8923	.5965	.0131	+65	+12
B. A. C. 6448	6	1.70	+ 0.6	23 20.0	21 44.9	- 8 59 13	-0.9718	.5965	-.0011	-40	-90
B. A. C. 6490	6½	1.76	0.3	25 1.5	22 0 12.9	- 6 37 14	+0.7485	.5962	+.0057	+65	+ 3
ψ Sagittarii	5	+1.84	+ 0.6	-25 28.5	5 17.0	- 1 45 19	+1.2717	.5958	+.0197	+65	+62
B. A. C. 6576	6	1.82	1.0	24 23.9	5 18.2	- 1 44 8	+0.1786	.5958	.0198	+26	-30
χ¹ Sagittarii	6	1.88	1.3	24 45.4	9 5.5	+ 1 53 58	+0.6367	.5953	.0301	+58	- 4
χ² Sagittarii	6½	1.88	1.4	24 39.8	9 8.1	+ 1 56 29	+0.5444	.5953	.0303	+50	- 9
χ³ Sagittarii	6	1.87	1.5	24 12.7	9 11.6	+ 1 59 54	+0.0868	.5953	.0304	+22	-35
B. A. C. 6699	6½	1.91	2.2	23 35.2	13 10.3	+ 5 49 0	-0.4046	.5943	+.0411	- 4	-67
h¹ Sagittarii	6	+1.93	+ 1.7	-24 59.9	13 17.5	+ 5 55 53	+1.0342	.5943	+.0415	+65	+24
h² Sagittarii	4½	1.94	1.7	25 9.9	13 33.0	+ 6 10 46	+1.2142	.5942	.0422	+65	+44
B. A. C. 6727	6½	1.94	2.3	23 43.2	14 55.3	+ 7 29 48	-0.1945	.5939	.0459	+ 8	-52
B. A. C. 6864	6	2.03	3.5	23 5.3	23 18.9	- 8 26 36	-0.3573	.5912	.0681	+ 2	-63
B. A. C. 6878	6½	2.04	3.7	22 57.2	23 0 14.7	- 7 32 57	-0.4299	.5909	.0705	- 2	-69
4 Capricorni	6	2.09	4.6	22 12.3	5 56.5	- 2 4 32	-0.7497	.5887	.0850	-18	-90
B. A. C. 7049	6	+2.15	+ 4.9	-22 48.9	10 32.6	+ 2 20 45	+0.2899	.5866	+.0964	+40	-24
17 Capricorni	6	2.21	6.0	21 58.8	17 18.1	+ 8 50 37	+0.1435	.5834	.1126	+33	-32
η Capricorni	5½	2.25	7.3	20 21.7	24 0 49.1	- 7 55 27	-0.5999	.5790	.1294	- 5	-83
χ Capricorni	6	2.29	7.1	20 42.5	2 31.0	- 6 17 28	+1.0000	.5781	.1331	+68	+19
27 Capricorni	6	2.28	7.4	21 4.2	2 55.9	- 5 53 26	+0.4031	.5778	.1340	+50	-18
φ Capricorni	6	2.30	7.6	21 10.9	5 28.2	- 3 26 50	+0.8654	.5765	.1393	+69	+ 9
ε Capricorni	4½	+2.35	+ 8.9	-20 2.4	14 32.4	+ 5 17 14	+1.0060	.5707	+.1574	+70	+22
κ Capricorni	5	2.36	9.3	19 27.0	16 55.4	+ 7 35 4	+0.8193	.5693	.1618	+71	+ 6
29 Aqua., *mult.*	6	2.39	10.6	17 34.8	25 1 31.2	- 8 7 39	+0.3559	.5637	.1767	+52	-21
56 Aquarii	6	2.43	12.2	15 14.4	13 53.8	+ 3 48 59	+0.2510	.5556	.1953	+48	-27
τ¹ Aqua., *mult.*	6	2.45	12.9	14 43.9	21 48.8	+11 27 46	+1.3137	.5508	.2053	+75	+48
τ² Aquarii	4	2.45	13.0	14 16.1	22 40.9	-11 41 54	+1.0132	.5503	.2064	+76	+18
74 Aquarii	6	+2.44	+13.4	-12 17.8	26 0 28.9	- 9 57 29	-0.6552	.5492	+.2084	+ 1	-87
ψ¹ Aquarii	4½	2.45	14.4	9 47.2	10 54.7	+ 0 7 35	-1.0344	.5434	.2189	-21	-90
ψ² Aquarii	4½	2.45	14.5	9 53.0	11 53.3	+ 1 4 13	-0.7206	.5429	.2197	- 1	-90
ψ³ Aquarii	5	2.45	14.5	10 18.7	12 22.8	+ 1 32 49	-0.1662	.5425	.2201	+29	-50
B. A. C. 8214	6½	2.46	15.1	8 10.4	20 16.7	+ 9 11 22	-0.6311	.5384	.2261	+ 5	-83
B. A. C. 8274	6½	2.46	15.4	7 5.5	27 2 33.4	- 8 43 59	-0.3298	.5356	.2300	+21	-60
30 Piscium	5	+2.47	+15.7	- 6 43.6	9 5.8	- 2 23 54	+0.8026	.5325	+.2331	+83	+ 3
33 Piscium	5	2.47	15.7	6 25.5	10 45.4	- 0 47 23	+0.8750	.5319	.2338	+84	+ 7
B. A. C. 17	6½	2.47	15.8	5 57.7	13 12.3	+ 1 34 57	+0.9618	.5309	.2346	+84	+13
B. A. C. 81	6½	2.46	16.1	2 55.7	20 13.7	+ 8 23 16	-0.5729	.5282	.2364	+10	-77
14 Ceti	6½	2.46	16.1	1 12.6	28 1 43.9	-10 16 37	-1.0814	.5265	.2372	-21	-90
15 Ceti	6½	+2.46	+16.1	- 1 12.5	3 0.8	- 0 2 6	-0.7800	.5261	+.2373	- 2	-90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

SEPTEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m s				°	°
26 Ceti, *mult.*	6½	+2.45	+16.1	+ 0 40.7	28 15 59.1	+ 3 32 38	+0.2968	.5229	+.2366	+57	−25
29 Ceti	6½	2.45	16.0	1 19.3	18 6.1	+ 5 35 48	+0.1136	.5225	.2362	+47	−34
33 Ceti	6	2.45	16.0	1 45.8	19 24.8	+ 6 52 10	−0.0456	.5222	.2358	+38	−43
35 Ceti	6½	2.45	16.0	1 47.6	20 25.1	+ 7 50 39	+0.1588	.5220	.2357	+49	−32
f Piscium	6	2.45	15.9	2 56.3	23 5.6	+10 26 23	−0.4311	.5217	.2350	+18	−66
B. A. C. 408	6½	+2.45	+15.7	+ 4 4.0	29 1 35.5	−11 8 14	−1.0483	.5213	+.2341	−18	−86
ν Piscium	4½	2.43	15.4	4 50.3	11 8.8	− 1 52 3	+0.3461	.5202	.2301	+61	−22
64 Ceti	6½	2.41	14.5	7 58.1	30 2 26.3	−11 1 49	+0.4355	.5199	.2206	+67	−16
ξ¹ Ceti	4½	2.41	14.4	8 14.7	3 16.1	−10 13 32	+0.3220	.5198	.2200	+59	−22
B. A. C. 728	6½	2.40	13.9	10 15.1	8 28.3	− 5 10 37	−0.7109	.5201	.2160	+ 2	−80
B. A. C. 741	6½	+2.39	+14.0	+ 9 8.0	9 8.0	− 4 32 7	+0.6409	.5201	+.2153	+84	− 4
ξ Arietis	5½	2.40	13.8	10 1.7	9 17.0	− 4 23 27	−0.2948	.5201	.2152	+25	−65
B. A. C. 755	6	2.40	13.8	9 59.1	10 16.5	− 3 25 44	−0.0353	.5202	.2143	+39	−40
31 Arietis	5½	2.39	13.2	11 53.5	15 15.6	+ 1 24 29	−1.0416	.5207	.2099	−19	−78
38 Arietis	5	+2.38	+12.9	+11 54.3	19 30.6	+ 5 31 54	−0.1742	.5213	+.2057	+31	−46
OCTOBER.											
B. A. C. 1240	6	+2.24	+ 8.7	+17 49.8	2 9 24.4	− 5 43 32	+0.3134	.5286	+.1581	+59	−15
ω¹ Tauri	6	2.24	8.0	19 16.1	13 28.9	− 1 46 38	−0.6349	.5295	.1520	+ 5	−68
ω² Tauri	5½	2.22	7.3	20 15.7	17 25.9	+ 2 2 58	−1.1400	.5305	.1457	−30	−70
B. A. C. 1361	6	2.17	7.4	18 44.8	21 12.5	+ 5 42 27	+1.0668	.5317	.1396	+90	+23
ε Tauri	3½	2.16	7.2	18 53.6	22 59.2	+ 7 25 46	+1.1495	.5323	.1366	+90	+40
ι Tauri	5	2.06	4.9	21 24.3	3 15 31.8	− 0 33 15	+0.4066	.5364	.1077	+66	− 4
105 Tauri	6	+2.04	+ 4.6	+21 32.1	17 50.0	+ 1 40 33	+0.5068	.5370	+.1034	+75	+ 2
κ Tauri	6	2.00	4.0	21 57.8	23 12.9	+ 6 53 2	+0.5630	.5384	.0934	+80	+ 6
ο Tauri	6	1.96	3.6	21 49.5	4 3 10.4	+10 42 47	+1.0693	.5392	.0858	+90	+38
121 Tauri	6	1.84	2.6	23 57.1	6 48.0	− 9 46 43	−0.9849	.5403	.0787	−19	−66
B. A. C. 1774	6½	1.93	2.7	23 14.8	8 36.4	− 8 1 51	−0.0661	.5407	.0751	+37	−23
132 Tauri	5½	1.89	1.8	24 31.3	13 9.2	− 3 38 2	−1.1556	.5416	.0660	−35	−66
1 Geminorum	5	+1.81	+ 1.6	+23 16.1	20 14.5	+ 3 13 15	+0.6489	.5430	+.0516	+90	+15
2 Geminorum	6½	1.80	1.3	23 38.9	21 28.9	+ 4 25 17	+0.2909	.5433	.0491	+58	− 4
3 Geminorum	6	1.78	1.4	23 7.9	22 51.4	+ 5 45 1	+0.9272	.5436	.0462	+90	+32
5 Geminorum	6	1.79	0.8	24 26.7	23 39.5	+ 6 31 34	−0.4897	.5437	.0445	+12	−50
6 Geminorum	6	1.76	+ 1.3	22 56.1	5 5 3.7	+ 6 54 56	+1.1995	.5437	.0437	+90	+55
B. A. C. 2154	6½	1.65	− 0.3	24 41.6	11 39.5	− 5 52 24	−0.3796	.5455	.0193	+10	−38
ε Geminorum	3½	+1.63	− 0.8	+25 15.3	14 37.9	− 3 0 0	−0.9530	.5459	+.0130	−18	−65
B. A. C. 2238	6	1.57	0.5	23 45.1	18 23.9	+ 0 38 26	+0.7423	.5464	.0050	+90	+24
37 Geminor.	6	1.57	1.3	25 32.0	19 52.2	+ 2 3 48	−1.2204	.5465	+.0018	−46	−65
ω Geminorum	6	1.52	1.2	24 23.8	23 10.1	+ 5 15 1	+0.0294	.5467	−.0053	+42	−13
48 Geminor.	6	1.46	1.6	24 20.5	6 3 46.9	+ 9 42 34	+0.0423	.5470	.0152	+48	−14
52 Geminor.	6	1.46	1.8	25 6.3	4 47.6	+10 41 15	−0.8145	.5472	.0174	− 8	−65
A Geminor.	5½	+1.41	− 2.3	+25 17.7	8 49.9	− 9 24 38	−1.1120	.5472	−.0261	−31	−65
B. A. C. 2514	6½	1.31	2.5	24 30.6	16 4.3	− 2 24 52	−0.4918	.5472	.0416	+13	−48
κ Gemi., *mult.*	3½	1.28	2.8	24 42.3	18 28.9	− 0 5 7	−0.8104	.5472	.0467	− 7	−66
84 Geminor.	6½	1.22	2.3	22 39.9	22 28.3	+ 3 46 15	+1.2241	.5471	.0552	+90	+57
7 Cancri	6½	1.16	2.5	22 25.9	7 3 27.5	+ 8 35 24	+1.1779	.5469	.0657	+90	+51
μ¹ Cancri	6	1.15	2.8	23 0.1	4 34.6	+ 9 40 15	+0.4785	.5469	.0680	+71	+ 4
γ Cancri	4½	+0.94	− 3.3	+21 55.8	21 41.4	+ 2 12 44	+0.1786	.5453	−.1030	+51	−15
η Leonis	3½	0.50	3.3	17 23.4	9 13 9.3	− 7 37 21	−0.4480	.5401	.1741	+16	−58
42 Leonis	6	0.44	3.0	15 37.5	20 4.2	− 0 55 55	+0.1934	.5391	.1845	+52	−23
B. A. C. 3579	6	0.41	2.3	15 0.0	23 21.1	+ 2 17 30	+0.2341	.5388	.1893	+54	−22
i Leonis	6	0.39	2.9	14 47.8	10 1 0.9	+ 3 51 15	+0.1427	.5387	.1917	+48	−27
k Leonis	6	0.34	2.9	14 52.4	7 49.0	+10 26 6	−1.2720	.5379	.2009	−42	−75
ι Leonis, *mult.*	4	+0.21	− 2.3	+11 14.3	11 1 48.3	+ 3 50 48	−1.2459	.5371	−.2215	−36	−79

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

OCTOBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
ω Virginis	6½	+0.17	- 1.9	+ 8 50.8	11 8 48.5	+10 37.6	-0.3216	.5371	-.2281	+23	-57
ξ Virginis	5	0.16	1.9	8 58.5	12 4.9	-10 12.4	-1.2036	.5371	.2310	-31	-81
ν Virginis	4½	0.15	1.6	7 15.9	12 22.0	- 9 55.8	+0.5210	.5371	.2311	+73	-11
π Virginis	4½	0.12	1.7	7 19.9	19 33.9	- 2 57.7	-1.2457	.5378	.2364	-35	-83
B. A. C. 4104	6½	0.10	1.3	4 46.3	12 0 43.8	+ 2 2.2	+0.1736	.5384	.2388	+50	-30
c Virginis	5	+0.09	- 1.2	+ 4 1.8	4 53.8	+ 6 4.1	-0.0655	.5390	-.2419	+37	-44
ξ^1 Libræ	6	0.12	1.0	-11 22.3	15 3 14.7	+ 2 3.0	-1.3338	.5654	.2189	-53	-90
o^1 Libræ	6	0.22	1.5	15 4.9	14 32.8	-11 3.5	-0.0032	.5719	.2024	+34	-41
o^2 Libræ	6	0.22	1.4	14 40.3	15 24.0	-10 14.1	-0.5865	.5725	.2020	+ 3	-80
ζ^1 Libræ	4	0.24	1.6	16 15.9	17 34.0	- 8 8.9	+0.5749	.5740	.1986	+67	- 9
ζ^2 Libræ	7	+0.25	- 1.7	-16 59.6	18 6.8	- 7 37.3	+1.1962	.5742	-.1979	+73	+34
B. A. C. 5099	7	0.25	1.7	16 48.5	18 22.0	- 7 22.7	+0.9605	.5744	.1974	+73	+14
ζ^3 Libræ	6	0.25	1.6	16 10.0	18 34.8	- 7 10.4	+0.2750	.5745	.1971	+49	-26
ζ^4 Libræ	6	0.26	1.6	16 24.8	19 31.0	- 6 16.3	+0.3391	.5751	.1955	+52	-22
β^1 Scorpii	2	0.37	2.0	19 27.0	16 8 50.5	+ 6 33.1	+0.9292	.5825	.1712	+71	+13
β^2 Scorpii	5½	+0.37	- 2.0	-19 26.9	8 50.6	+ 6 33.2	+0.9258	.5825	-.1712	+71	+13
ν^1 Scorpii	7	0.39	1.9	19 6.8	11 29.9	+ 9 6.4	+0.1445	.5839	.1658	+38	-32
ν^2 Scorpii	4	0.39	1.9	19 7.4	11 30.3	+ 9 6.8	+0.1529	.5839	.1658	+38	-32
B. A. C. 5408	6½	0.40	1.7	18 12.0	12 36.2	+10 10.2	-0.9519	.5845	.1635	-23	-90
ψ Ophiuchi	5	0.44	1.9	19 44.0	16 21.9	-10 12.9	-0.0178	.5864	.1556	+28	-42
ω Ophiuchi	5	+0.48	- 2.2	-21 11.3	19 32.5	- 7 9.7	+0.9550	.5879	-.1486	+69	+15
B. A. C. 5663	6½	0.57	1.7	20 12.0	17 3 59.1	+ 0 57.0	-1.2073	.5921	.1290	-40	-90
B. A. C. 5758	6	0.63	1.8	21 23.0	8 57.8	+ 5 43.8	-0.6352	.5940	.1168	- 9	-88
b Ophiuchi	5	0.74	2.3	24 3.3	16 44.4	-10 48.3	+1.2114	.5965	.0967	+66	+41
c^3 Ophiuchi	5	0.76	2.2	23 51.6	18 41.7	- 8 55.7	+0.8335	.5970	.0916	+66	+ 8
63 Ophiuchi	6½	+0.89	- 2.0	-24 51.7	18 3 42.6	- 0 16.8	+1.1238	.5989	-.0671	+65	+32
4 Sagittarii	5	0.91	1.6	23 48.1	5 36.6	+ 1 32.5	-0.0635	.5994	.0618	+17	-44
B. A. C. 6088	6	0.92	1.2	22 46.5	6 26.5	+ 2 20.5	-1.1458	.5995	.0596	-40	-90
7 Sagittarii	6	0.93	1.7	24 16.8	6 46.2	+ 2 39.3	+0.3467	.5995	.0587	+39	-21
9 Sagittarii	4½	0.94	1.7	24 21.7	7 9.6	+ 3 1.8	+0.4060	.5994	.0576	+43	-18
B. A. C. 6161	6	+0.98	- 1.3	-23 43.5	10 10.7	+ 5 55.5	-0.3951	.5998	-.0492	- 2	-66
B. A. C. 6217	6½	1.04	1.5	24 58.2	13 54.2	+ 9 29.8	+0.6945	.5999	.0387	+64	- 1
λ Sagittarii	3	1.07	1.5	25 29.5	16 21.7	+11 51.4	+1.1334	.5999	.0317	+65	+33
24 Sagittarii	6	1.10	0.9	24 7.5	18 39.3	- 9 56.7	-0.3075	.5998	.0252	+ 1	-60
B. A. C. 6343	6	1.12	0.6	23 36.7	20 26.1	- 8 14.3	-0.8654	.5995	.0202	-31	-90
26 Sagittarii	6	+1.14	- 0.6	-23 57.1	21 42.5	- 7 1.0	-0.5471	.5995	-.0165	-13	-79
B. A. C. 6369	6	1.17	0.9	25 8.5	22 49.2	- 5 57.0	+0.6371	.5994	.0134	+57	- 4
B. A. C. 6448	6	1.21	0.0	23 20.0	19 3 9.1	- 1 47.6	-1.2196	.5988	-.0011	-60	-90
B. A. C. 6490	6½	1.26	0.4	25 1.5	5 35.6	+ 0 32.9	+0.4941	.5984	+.0058	+45	-12
ψ Sagittarii	5	1.34	- 0.2	25 28.5	10 37.3	+ 5 22.3	+1.0159	.5970	.0198	+65	+22
B. A. C. 6576	6	+1.33	+ 0.2	-24 23.9	10 38.7	+ 5 23.6	-0.0738	.5970	+.0199	+12	-45
χ^1 Sagittarii	6	1.39	0.4	24 45.4	14 24.3	+ 9 0.1	+0.3835	.5960	.0304	+39	-19
χ^2 Sagittarii	6½	1.39	0.4	24 39.8	14 26.9	+ 9 2.6	+0.2914	.5959	.0306	+33	-24
χ^3 Sagittarii	6	1.38	0.6	24 12.7	14 30.4	+ 9 6.0	-0.1650	.5959	.0307	+ 9	-51
B. A. C. 6699	6½	1.43	1.2	23 35.3	18 27.9	-11 6.0	-0.6551	.5944	.0415	-17	-90
h^1 Sagittarii	6	+1.45	+ 0.7	-24 59.9	18 35.1	-10 59.1	+0.7811	.5944	+.0418	+65	+ 5
h^2 Sagittarii	4½	1.45	0.6	25 9.9	18 50.5	-10 44.3	+0.9612	.5944	.0425	+65	+18
B. A. C. 6727	6½	1.46	1.3	23 43.2	20 12.5	- 9 25.6	-0.4453	.5940	.0462	- 5	-70
B. A. C. 6864	6	1.57	2.2	23 5.3	20 4 35.3	- 1 22.8	-0.6057	.5898	.0685	-11	-85
B. A. C. 6878	6½	1.58	2.4	22 57.2	5 31.2	- 0 29.1	-0.6782	.5895	.0710	-15	-90
4 Capricorni	6	+1.65	+ 3.2	-22 12.3	11 13.6	+ 4 59.8	-0.9065	.5864	+.0854	-34	-90
B. A. C. 7049	6	+1.71	+ 3.3	-22 48.9	15 50.6	+ 9 26.1	+0.0466	.5841	+.0969	+26	-38

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

OCTOBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x'	y'	N'n.	S'n.
		s	"	° '	d h m	h m				°	°
17 Capricorni	6	+1.79	+ 4.3	-21 58.8	20 22 37.5	- 8 2.7	-0.0977	.5798	+.1127	+20	-46
B. A. C. 7197	6	1.82	3.9	23 12.3	23 31.1	- 7 11.1	+1.2589	.5791	.1148	+67	+49
η Capricorni	5½	1.86	5.6	20 21.7	21 6 13.2	- 0 44.0	-0.8364	.5747	.1295	-19	-90
χ Capricorni	6	1.90	5.2	21 42.5	7 56.1	+ 0 55.0	+0.7709	.5736	.1332	+69	+ 3
27 Capricorni	6	1.90	5.5	21 4.2	8 21.3	+ 1 19.3	+0.1722	.5733	.1341	+37	-31
φ Capricorni	6	+1.93	+ 5.7	-21 11.0	10 55.2	+ 3 47.5	+0.6389	.5715	+.1394	+66	- 5
37 Capricorni	6	2.01	6.6	20 39.4	19 8.7	11 43.0	+1.3125	.5657	.1554	+70	+58
ε Capricorni	4½	2.02	6.9	20 2.4	20 6.2	-11 21.6	+0.8281	.5652	.1571	+70	+ 7
κ Capricorni	5	2.03	7.3	19 27.0	22 31.2	- 9 1.7	+0.6054	.5633	.1615	+65	- 7
29 Aqua., *mult.*	6	2.10	8.6	17 34.9	22 7 15.1	- 0 36.4	+0.1508	.5575	.1764	+40	-33
56 Aquarii	6	+2.19	+10.3	-15 14.5	19 50.9	+11 33.5	+0.0636	.5494	+.1947	+38	-37
τ¹ Aqua., *mult.*	6	2.25	11.0	14 44.0	23 3 55.1	- 4 38.5	+1.1479	.5441	.2047	+76	+28
τ² Aquarii	4	2.26	11.2	14 16.2	4 48.2	- 3 47.1	+0.8466	.5436	.2057	+76	+ 6
74 Aquarii	6	2.26	11.8	12 17.9	6 38.4	- 2 0.5	-0.8316	.5421	.2078	- 9	-90
ψ¹ Aquarii	4½	2.32	13.1	9 47.2	17 17.0	+ 8 17.4	-1.1945	.5365	.2183	-34	-90
ψ² Aquarii	4½	+2.32	+13.1	- 9 53.0	18 16.8	+ 9 15.3	-0.8760	.5358	+.2190	-10	-90
ψ³ Aquarii	5	2.33	13.0	10 18.7	18 47.0	+ 9 44.5	-0.3161	.5356	.2194	+21	-59
B. A. C. 8214	6½	2.37	14.0	8 10.5	24 2 50.7	- 6 27.1	-0.7684	.5315	.2254	- 3	-90
B. A. C. 8274	6½	2.41	14.3	7 5.6	9 15.1	- 0 14.6	-0.4509	.5288	.2294	+15	-68
30 Piscium	5	+2.45	+14.6	- 6 43.6	15 55.5	+ 6 13.4	+0.7052	.5262	+.2326	+84	- 3
33 Piscium	5	2.46	14.7	6 25.5	17 37.1	+ 7 51.9	+0.7818	.5256	.2333	+74	+ 1
B. A. C. 17	6½	2.47	14.8	5 57.7	20 7.0	+10 17.1	+0.8752	.5246	.2343	+84	+ 7
B. A. C. 81	6½	2.50	15.5	2 55.7	25 3 16.3	- 6 46.5	-0.6548	.5226	.2363	+ 5	-85
14 Ceti	6½	+2.52	+15.8	- 1 12.6	8 52.6	- 1 20.3	-1.1535	.5210	+.2373	-26	-90
15 Ceti	6½	2.53	15.8	- 1 12.5	10 10.8	- 0 4.5	-0.8470	.5208	.2374	- 5	-90
26 Ceti, *mult.*	6½	2.59	16.0	+ 0 40.7	23 21.9	-11 16.9	+0.2694	.5183	.2370	+56	-26
29 Ceti	6½	2.60	16.1	1 19.3	26 1 30.7	- 9 11.9	+0.0901	.5182	.2368	+46	-36
33 Ceti	6	+2.60	+16.1	+ 1 45.8	2 50.6	- 7 54.4	-0.0667	.5180	+.2365	+37	-44
35 Ceti	6½	2.61	16.1	1 47.6	3 51.7	- 6 55.0	+0.1414	.5180	.2362	+48	-33
f Piscium	6	2.62	16.1	2 56.4	6 34.5	- 4 17.1	-0.4455	.5177	.2357	+17	-67
B. A. C. 408	6½	2.63	16.2	4 4.0	9 6.3	- 1 49.7	-1.0597	.5175	.2350	-19	-86
ν Piscium	4½	+2.67	+16.0	+ 4 50.3	18 46.4	+ 7 33.3	+0.3654	.5174	+.2313	+62	-21
64 Ceti	6½	2.73	15.4	7 58.2	27 10 12.2	- 1 28.3	+0.4911	.5170	.2221	+71	-13
ξ¹ Ceti	4½	2.73	15.4	8 14.7	11 2.3	- 0 39.6	+0.3788	.5182	.2216	+63	-19
B. A. C. 728	6½	2.76	15.1	10 15.1	16 16.4	+ 4 25.2	-0.6457	.5189	.2176	+ 6	-78
B. A. C. 741	6½	+2.75	+15.0	+ 9 8.0	16 56.3	+ 5 3.9	+0.7122	.5192	+.2171	+90	0
ξ Arietis	5½	2.76	15.0	10 1.7	17 5.3	+ 5 12.6	-0.2264	.5192	.2170	+29	-51
B. A. C. 755	6	2.76	14.9	9 59.1	18 5.2	+ 6 10.7	+0.0362	.5193	.2162	+43	-36
31 Arietis	5½	2.78	14.5	11 53.5	23 5.7	+11 2.3	-0.9618	.5199	.2118	-13	-78
38 Arietis	5	+2.79	+14.2	+11 54.3	28 3 21.7	- 8 49.4	-0.0828	.5207	+.2077	+35	-41
B. A. C. 1096	6½	2.86	11.6	17 24.7	29 4 3.3	- 8 52.5	-1.3038	.5265	.1792	-49	-73
B. A. C. 1240	6	2.85	10.1	17 49.8	17 5.0	+ 3 54.7	+0.4749	.5303	.1603	+72	- 6
ω¹ Tauri	6	2.87	9.5	19 16.1	21 18.8	+ 7 50.9	-0.4668	.5314	.1541	+15	-57
ω² Tauri	5½	+2.88	+ 8.8	+20 15.7	30 1 15.0	+11 39.7	-0.9663	.5323	+.1478	-16	-70
B. A. C. 1361	6	2.84	8.6	18 44.8	5 0.8	- 8 41.6	+1.2477	.5334	.1416	+90	+50
ι Tauri	6	2.81	5.8	21 24.3	23 15.8	+ 8 58.5	+0.6103	.5383	.1093	+85	+ 7
105 Tauri	6	2.80	5.5	21 32.1	31 1 33.5	+11 11.8	+0.7132	.5390	.1050	+90	+13
ϰ Tauri	6	+2.78	+ 4.6	+21 57.8	6 55.3	- 7 36.9	+0.7752	.5401	+.0947	+90	+18
121 Tauri	6	2.77	3.2	23 57.1	14 29.0	- 0 18.0	-0.7676	.5420	.0799	- 4	-66
B. A. C. 1774	6½	2.75	3.1	23 14.8	16 17.1	+ 1 26.5	+0.1544	.5419	.0763	+50	-14
132 Tauri	5½	+2.74	+ 2.1	+24 31.3	20 49.2	+ 5 49.7	-0.9333	.5428	+.0671	-15	-66

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

NOVEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Red'ns from 1871.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
1 Geminorum	5	+2.66	+ 1.5	+23 16.1	1 3 53.8	-11 19.7	+0.8804	.5440	+.0525	+90	+28
2 Geminorum	6½	2.65	1.2	23 38.9	5 8.3	-10 7.7	+0.5226	.5442	.0499	+87	+18
3 Geminorum	6	2.64	1.1	23 7.9	6 30.7	- 8 48.0	+1.1614	.5442	.0470	+90	+51
5 Geminorum	6	2.65	+ 0.7	24 26.7	7 18.8	- 8 1.5	-0.2581	.5442	.0453	+26	-33
B. A. C. 2154	6½	2.55	- 1.1	24 41.6	19 19.1	+ 3 34.9	-0.1409	.5455	.0199	+33	-24
ε Geminorum	3½	2.53	1.6	25 15.3	22 17.8	+ 6 27.6	-0.7148	.5453	.0135	- 1	-64
B. A. C. 2238	6	+2.46	- 1.6	+23 45.1	2 2 4.4	+10 6.6	+0.9884	.5457	+.0054	+90	+40
37 Geminorum	6	2.48	2.4	25 32.0	3 33.0	+11 32.3	-0.9797	.5457	+.0023	-19	-65
ω Geminorum	6	2.42	2.5	24 23.7	6 51.6	- 9 15.8	+0.2750	.5457	-.0051	+58	- 1
48 Geminor.	6	2.37	3.0	24 20.5	11 29.7	- 4 47.0	+0.2895	.5457	.0149	+59	- 1
52 Geminor.	6	2.37	3.4	25 6.2	12 30.7	- 3 48.0	-0.5710	.5457	.0170	+ 8	-51
A Geminorum	5½	2.33	4.0	25 17.7	16 34.4	+ 0 7.6	-0.8688	.5454	.0257	-11	-65
B. A. C. 2514	6½	+2.23	- 4.6	+24 30.6	23 51.8	+ 7 10.4	-0.2443	.5450	-.0413	+27	-32
κ Gemi., *mult.*	3½	2.20	4.9	24 42.2	3, 2 17.6	+ 9 31.3	-0.5644	.5446	.0464	+ 9	-53
μ^1 Cancri	6	2.05	5.5	23 0.0	12 29.3	- 4 37.3	+0.7330	.5434	.0677	+90	+18
γ Cancri	4½	1.82	6.8	21 55.8	4 5 49.5	-11 51.4	+0.4291	.5404	.1025	+68	- 1
B. A. C. 3138	6	1.63	7.9	21 48.7	20 10.3	+ 2 1.3	-1.1064	.5375	.1294	-28	-68
η Leonis	3½	1.27	7.9	17 23.3	5 22 1.2	+ 3 2.5	-0.2252	.5329	.1727	+28	-45
42 Leonis	6	+1.18	- 7.6	+15 37.4	6 5 4.9	+ 9 52.7	+0.4152	.5318	-.1831	+66	-12
B. A. C. 3579	6	1.13	7.5	14 59.9	8 29.1	-10 49.6	+0.4525	.5315	.1879	+69	-11
i Leonis	6	1.11	7.5	14 47.7	10 8.0	- 9 13.7	+0.3584	.5314	.1902	+62	-16
k Leonis	6	1.04	7.8	14 52.3	17 4.8	- 2 30.1	-1.0760	.5307	.1993	-22	-75
ι Leonis, *mult.*	4	0.83	7.0	11 14.3	7 11 26.3	- 8 43.2	-1.0740	.5302	.2204	-21	-79
ω Virginis	6½	0.76	6.4	8 50.7	18 34.5	- 1 48.4	-0.1544	.5308	.2271	+33	-47
ξ Virginis	5	+0.73	- 6.5	+ 8 58.4	21 54.3	+ 1 25.1	-1.0476	.5310	-.2299	-18	-81
ν Virginis	4½	0.72	6.0	7 15.0	22 11.8	+ 1 42.0	+0.6873	.5310	.2302	+89	- 3
A^1 Virginis	5½	0.72	6.5	8 57.6	23 12.1	+ 2 40.5	-1.3314	.5310	.2313	-36	-81
π Virginis	4½	0.66	6.1	7 19.9	8 5 30.9	+ 8 47.3	-1.1020	.5320	.2357	-22	-83
11 Virginis	6	0.62	5.9	6 31.4	9 59.5	-10 52.6	-1.3204	.5327	.2387	-44	-84
B. A. C. 4104	6½	0.61	5.4	4 46.2	10 45.6	-10 8.0	+0.3145	.5329	.2392	+59	-24
c Virginis	5	+0.58	- 5.3	+ 4 1.8	14 59.0	- 6 2.6	+0.0662	.5339	-.2415	+44	-36
65 Virginis	6	0.39	3.5	- 4 14.9	9 20 49.2	- 1 10.2	+1.1795	.5448	.2482	+86	+28
66 Virginis	6	0.39	3.4	4 29.4	21 23.0	- 0 37.6	+1.2832	.5450	.2482	+86	+28
80 Virginis	6	0.37	3.4	4 44.4	10 2 27.4	+ 4 16.6	+0.2777	.5476	.2473	+56	-26
94 Virginis	6	0.32	2.8	8 16.5	16 22.3	- 6 16.8	+0.4325	.5555	.2414	+64	-18
95 Virginis	6	0.32	2.7	8 41.8	16 33.8	- 6 5.7	+0.8093	.5558	.2413	+82	+ 3
B. A. C. 5663	6½	+0.43	- 1.5	-20 12.0	13 12 48.6	+11 34.4	-1.2984	.6020	-.1327	-63	-90
24 Ophiuchi	6½	0.45	1.8	22 56.6	14 2.2	-11 15.1	+1.2459	.6025	.1296	+67	+45
B. A. C. 5758	6	0.46	1.5	21 23.0	17 37.5	- 7 48.6	-0.7416	.6045	.1203	-15	-90
B. A. C. 5831	6	0.50	1.8	23 55.7	22 2.9	- 3 34.2	+1.2639	.6061	.1084	+66	+50
b Ophiuchi	5	0.53	1.7	24 3.2	14 1 8.4	- 0 36.5	+1.0656	.6071	.0999	+66	+25
c^3 Ophiuchi	5	0.54	1.6	23 51.6	3 1.7	+ 1 12.0	+0.6912	.6078	.0946	+65	- 1
63 Ophiuchi	6½	+0.63	- 1.5	-24 51.7	11 43.8	+ 9 32.1	+0.9657	.6099	-.0698	+65	+17
4 Sagittarii	5	0.64	1.2	23 48.1	13 33.7	+11 17.4	-0.2045	.6105	.0643	+ 9	-53
B. A. C. 6088	6	0.64	1.0	22 46.5	14 21.9	-11 56.4	-1.2703	.6106	.0619	-64	-90
7 Sagittarii	6	0.65	1.3	24 16.8	14 40.9	-11 38.2	+0.1978	.6105	.0610	+30	-29
9 Sagittarii	4½	0.66	1.3	24 21.7	15 3.5	-11 16.6	+0.2558	.6105	.0598	+34	-26
B. A. C. 6161	6	0.68	1.0	23 43.5	17 58.3	- 8 29.2	-0.5358	.6109	.0512	-10	-78
B. A. C. 6217	6½	+0.72	- 1.2	-24 58.2	21 33.9	- 5 2.7	+0.5325	.6110	-.0404	+50	-10
λ Sagittarii	3	0.75	1.2	25 29.5	23 56.3	- 2 46.4	+0.9620	.6109	.0401	+65	+17
24 Sagittarii	6	0.77	0.7	24 7.5	15 2 9.1	- 0 39.2	-0.4581	.6106	.0267	- 8	-71
MARS				-24 36.0	2 46.6	- 0 3.3	-0.0030	.5791	.0231	+16	-40
B. A. C. 6343	6	0.79	- 0.5	23 36.7	3 52.2	+ 0 59.5	-1.0088	.6103	.0215	-40	-90
26 Sagittarii	6	+0.80	- 0.5	-23 57.1	5 5.9	+ 2 10.1	-0.6971	.6105	-.0178	-21	-90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

NOVEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 6369	6	+0.82	− 0.8	−25 8.5	15 6 10.4	+ 3 11.8	+0.4677	.6102	−.0146	+43	−14
B. A. C. 6490	6½	0.90	0.4	25 1.5	12 43.0	+ 9 27.9	+0.3212	.6087	+.0051	+33	−22
ψ Sagittarii	5	0.96	− 0.3	25 28.5	17 34.7	− 9 52.7	+0.8316	.6071	.0195	+65	+ 8
B. A. C. 6576	6	0.95	0.0	24 23.9	17 36.0	− 9 51.4	−0.2419	.6070	.0196	+ 3	−56
χ^1 Sagittarii	6	1.00	+ 0.1	24 45.4	21 14.4	− 6 22.2	+0.2059	.6057	.0302	+29	−29
χ^2 Sagittarii	6½	1.00	0.2	24 39.8	21 16.9	− 6 19.8	+0.1150	.6056	.0304	+23	−34
χ^3 Sagittarii	6	+1.00	+ 0.3	−24 12.7	21 20.3	− 6 16.5	−0.3348	.6056	+.0306	− 1	−62
B. A. C 6699	6½	1.04	0.7	23 35.3	16 1 10.4	− 2 36.0	−0.8208	.6039	.0416	−26	−90
h^1 Sagittarii	6	1.05	0.3	24 59.9	1 17.3	− 2 29.4	+0.5952	.6036	.0419	+55	− 7
h^2 Sagittarii	4½	1.05	0.3	25 9.9	1 32.3	− 2 15.0	+0.7722	.6035	.0427	+65	+ 4
B. A. C. 6727	6½	1.06	0.8	23 43.2	2 51.7	− 0 58.8	−0.6151	.6032	.0465	−14	−87
B. A. C. 6864	6	1.16	1.5	23 5.3	10 59.7	+ 6 49.1	−0.7789	.5985	.0691	−22	−90
B. A. C. 6878	6½	+1.17	+ 1.6	−22 57.3	11 54.0	+ 7 41.2	−0.8509	.5977	+.0715	−25	−90
4 Capricorni	6	1.23	2.2	22 12.3	17 27.1	−10 59.2	−1.1687	.5940	.0862	−48	−90
B. A. C. 7049	6	1.30	2.3	22 49.0	21 57.1	− 6 40.0	−0.1404	.5911	.0977	+16	−49
17 Capricorni	6	1.37	3.0	21 58.8	17 4 35.2	− 0 17.5	−0.2837	.5858	.1139	+10	−58
B. A. C. 7197	6	1.39	2.7	23 12.3	5 26.7	+ 0 32.0	+1.0563	.5852	.1159	+67	+24
η Capricorni	5½	1.45	4.1	20 21.7	12 0.5	+ 6 50.6	−1.0191	.5799	.1307	−31	−90
χ Capricorni	6	+1.48	+ 3.7	−21 42.5	13 41.4	+ 8 27.7	+0.5729	.5785	+.1345	+61	− 9
27 Capricorni	6	1.48	4.0	21 4.2	14 6.1	+ 8 51.5	−0.0204	.5782	.1353	+26	−42
φ Capricorni	6	1.52	4.4	21 11.0	16 37.3	+11 16.9	+0.4417	.5759	.1405	+53	−16
33 Capricorni	6	1.56	4.3	21 23.8	20 10.6	− 9 17.7	+1.1733	.5731	.1478	+69	+34
37 Capricorni	6	1.61	4.8	20 39.4	18 0 42.3	− 4 56.1	+1.1092	.5692	.1566	+70	+27
ε Capricorni	4½	1.62	5.1	20 2.5	1 39.4	− 4 1.0	+0.6301	.5684	.1584	+66	− 6
κ Capricorni	5	+1.64	+ 5.4	−19 27.1	4 2.5	− 1 43.1	+0.4095	.5659	+.1628	+53	−18
B. A. C. 7550	6	1.65	5.2	20 12.5	4 16.6	− 1 29.5	+1.2243	.5659	.1631	+70	+39
29 Aqua., *mult.*	6	1.72	6.6	17 34.9	12 40.5	+ 6 36.4	−0.0411	.5588	.1773	+30	−43
56 Aquarii	6	1.85	8.2	15 14.5	19 1 11.1	− 5 19.0	−0.1241	.5490	.1953	+27	−48
τ^1 Aqua., *mult.*	6	1.93	8.8	14 44.0	9 13.9	+ 2 27.7	+0.9618	.5429	.2051	+76	+14
τ^2 Aquarii	4	1.94	9.0	14 16.2	10 7.0	+ 3 19.0	+0.6616	.5424	.2061	+75	− 5
74 Aquarii	6	+1.95	+ 9.7	−12 17.9	11 57.1	+ 5 5.5	−1.0123	.5414	+.2080	−20	−90
ψ^1 Aquarii	4½	2.04	11.0	9 47.2	22 36.8	− 8 35.5	−1.3690	.5341	.2182	−60	−90
ψ^2 Aquarii	4½	2.05	11.0	9 53.0	23 36.7	− 7 37.5	−1.0498	.5333	.2190	−21	−90
ψ^3 Aquarii	5	2.06	10.9	10 18.7	20 0 7.0	− 7 8.1	−0.4899	.5331	.2193	+12	−71
B. A. C. 8214	6½	2.13	11.9	8 10.5	8 13.3	+ 0 42.8	−0.9361	.5283	.2252	−12	−90
B. A. C. 8274	6½	2.19	12.4	7 5.6	14 40.5	+ 6 58.0	−0.6128	.5252	.2290	+ 7	−81
30 Piscium	5	+2.25	+12.6	− 6 43.6	21 24.5	−10 30.3	+0.5527	.5219	+.2321	+74	−12
33 Piscium	5	2.26	12.8	6 25.6	23 7.1	− 8 50.8	+0.6314	.5213	.2327	+80	− 7
B. A. C. 17	6½	2.29	12.9	5 57.7	21 1 38.5	− 6 24.0	+0.7280	.5201	.2336	+83	− 2
B. A. C. 81	6½	2.35	13.9	2 55.7	8 52.7	+ 0 37.3	−0.7976	.5178	.2355	− 2	−90
14 Ceti	6½	2.40	14.4	1 12.7	14 33.2	+ 6 7.6	−1.2912	.5162	.2364	−40	−90
15 Ceti	6½	2.41	14.4	− 1 12.6	15 52.4	+ 7 24.5	−0.9817	.5159	.2365	−14	−90
26 Ceti, *mult.*	6½	+2.52	+14.8	+ 0 40.7	22 5 14.3	− 3 37.1	+0.1570	.5135	+.2362	+49	−32
29 Ceti	6½	2.54	14.9	1 19.3	7 25.0	− 1 30.2	−0.0203	.5130	.2358	+40	−42
33 Ceti	6	2.55	15.0	1 45.6	8 46.0	− 0 11.5	−0.1726	.5130	.2357	+32	−50
35 Ceti	6½	2.56	14.9	1 47.6	9 48.1	+ 0 48.7	+0.0350	.5129	.2355	+43	−39
f Piscium	6	2.59	15.2	2 56.3	12 33.2	+ 3 29.0	−0.5505	.5128	.2349	+12	−75
B. A. C. 408	6½	2.61	15.4	4 4.0	15 7.2	+ 5 58.6	−1.1641	.5127	.2341	−27	−86
ν Piscium	4½	+2.69	+15.2	+ 4 50.3	23 0 55.7	− 8 29.9	+0.2828	.5124	+.2306	+57	−25
64 Ceti	6½	2.83	15.0	7 58.2	16 34.3	+ 6 41.3	+0.4334	.5140	.2219	+67	−16
ξ^1 Ceti	4½	2.83	15.0	8 14.7	17 25.1	+ 7 30.6	+0.3219	.5141	.2214	+60	−22
B. A. C. 728	6½	2.89	15.0	10 15.1	22 43.3	−11 20.4	−0.6993	.5151	.2175	+ 3	−80
B. A. C. 741	6½	2.88	14.8	9 8.0	23 23.7	−10 41.2	+0.6661	.5152	.2170	+87	− 3
ξ Arietis	5½	+2.89	+14.9	+10 1.7	23 32.8	−10 32.4	−0.2768	.5152	+.2168	+26	−54

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

NOVEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Red'ns from 1871.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 755	6	+2.90	+14.8	+ 9 59.1	24 0 33.3	- 9 33.6	-0.0114	.5154	+.2160	+40	-39
31 Arietis	5½	2.95	14.7	11 53.5	5 37.5	- 4 38.4	-1.0062	.5164	.2118	-16	-78
38 Arietis	5	2.98	14.4	11 54.3	9 56.4	- 0 27.1	-0.1165	.5174	.2081	+34	-43
B. A. C. 1096	6½	3.17	12.4	17 24.7	10 51.3	- 0 17.0	-1.3047	.5248	.1800	-48	-73
B. A. C. 1240	6	3.25	10.7	17 49.9	26 0 7.4	-11 25.3	+0.4990	.5292	.1613	+74	- 5
ω¹ Tauri	6	3.29	10.2	19 16.1	4 12.1	- 7 28.1	-0.4411	.5305	.1551	+17	-55
ω² Tauri	5½	+3.33	+ 9.6	+20 15.7	8 9.1	- 3 38.5	-0.9369	.5321	+.1489	-13	-70
B. A. C. 1361	6	3.30	9.1	18 44.8	11 55.5	+ 0 0.7	+1.2871	.5332	.1428	+90	+56
ι Tauri	5	3.38	6.2	21 24.3	27 6 11.8	- 6 17.9	+0.6696	.5391	.1106	+90	+10
105 Tauri	6	3.38	5.9	21 32.1	8 29.5	- 4 4.6	+0.7750	.5400	.1063	+90	+16
n Tauri	6	3.39	5.0	21 57.8	13 51.1	+ 1 6.5	+0.8427	.5416	.0960	+90	+22
121 Tauri	6	3.43	3.5	23 57.1	21 24.3	+ 8 24.9	-0.6952	.5433	.0813	+ 1	-65
B. A. C. 1774	6½	+3.41	+ 2.9	+23 14.8	23 12.3	+10 9.3	+0.2301	.5437	+.0775	+55	-10
132 Tauri	5½	3.43	2.3	24 31.3	28 3 44.0	- 9 28.0	-0.8553	.5445	.0683	-10	-66
1 Geminorum	5	3.38	1.2	23 16.1	10 47.8	- 2 38.1	+0.9679	.5458	.0535	+90	+34
2 Geminorum	6½	3.38	0.9	23 38.9	12 2.1	- 1 26.3	+0.6103	.5459	.0509	+86	+12
3 Geminorum	6	3.36	0.8	23 7.9	13 24.4	- 0 6.8	+1.2517	.5462	.0481	+90	+61
5 Geminorum	6	3.40	+ 0.5	24 26.7	14 12.4	+ 0 39.7	-0.1702	.5462	.0463	+31	-28
B. A. C. 2154	6½	+3.34	- 1.7	+24 41.6	29 2 11.5	-11 45.2	-0.0433	.5470	+.0207	+38	-19
ε Geminorum	3½	3.34	2.3	25 15.3	5 10.0	- 8 52.6	-0.6163	.5471	.0143	+ 5	-54
B. A. C. 2238	6	3.28	2.7	23 45.1	8 56.3	- 5 13.9	+1.0937	.5471	.0061	+90	+48
37 Geminor.	6	3.31	3.3	25 32.0	10 24.8	- 3 48.3	-0.8800	.5473	+.0029	-12	-65
ω Geminorum	6	3.26	3.6	24 23.8	13 43.3	- 0 36.5	+0.3815	.5470	-.0042	+66	+ 6
48 Geminor.	6	3.22	4.4	24 20.5	18 21.4	+ 3 52.3	+0.3993	.5467	.0143	+65	+ 6
52 Geminor.	6	+3.23	- 4.7	+25 6.2	19 22.4	+ 4 51.3	-0.4631	.5466	-.0165	+14	-43
A Geminor.	5½	3.21	5.5	25 17.7	23 26.2	+ 8 47.0	-0.7598	.5464	.0252	- 4	-65
B. A. C. 2514	6½	3.12	6.5	24 30.6	30 6 44.3	- 8 9.5	-0.1293	.5453	.0408	+33	-25
κ Gemi., *mult.*	3½	3.10	6.9	24 42.2	9 10.4	- 5 48.3	-0.4497	.5450	.0459	+15	-45
μ¹ Cancri	6	+2.96	- 8.1	+23 0.0	19 24.2	+ 4 5.2	+0.8586	.5432	-.0673	+90	+17
DECEMBER.											
λ Cancri	6	+2.92	- 9.4	+24 25.4	1 2 2.7	+10 30.6	-1.2095	.5416	-.0807	-42	-66
γ Cancri	4½	2.75	10.2	21 55.7	12 51.2	- 3 2.1	+0.5602	.5388	.1020	+80	+ 5
B. A. C. 3138	6	2.58	11.9	21 48.7	2 3 21.7	+11 0.3	-0.9838	.5347	.1286	-18	-68
η Leonis	3½	2.19	12.9	17 23.2	3 5 38.8	-11 32.2	-0.0948	.5273	.1710	+36	-37
42 Leonis	6	2.08	12.8	15 37.3	12 51.7	- 4 32.7	+0.5518	.5258	.1811	+77	- 5
B. A. C. 3579	6	2.03	12.8	14 59.8	16 20.6	- 1 10.3	+0.5892	.5249	.1858	+81	- 3
i Leonis	6	+2.01	-12.8	+14 47.6	18 1.9	+ 0 27.9	+0.4938	.5247	-.1880	+72	- 9
k Leonis	6	1.93	13.3	14 52.3	4 1 9.0	+ 7 21.9	-0.9596	.5235	.1969	-13	-75
ι Leonis, *mult.*	4	1.68	12.7	11 14.2	20 1.1	+ 1 39.4	-0.9654	.5218	.2173	-13	-79
ω Virginis	6½	1.59	12.2	8 50.7	5 3 22.0	+ 8 47.0	-0.0373	.5217	.2238	+39	-41
ξ Virginis	5	1.55	12.2	8 58.3	6 48.0	-11 53.3	-0.9443	.5220	.2266	-12	-81
ν Virginis	4½	1.44	11.6	7 14.9	7 5.9	-11 35.9	+0.8136	.5220	.2269	+90	+ 5
A¹ Virginis	5½	+1.54	-12.3	+ 8 57.5	8 8.2	-10 35.6	-1.2328	.5219	-.2277	-34	-81
π Virginis	4½	1.46	11.8	7 19.8	14 38.7	- 4 17.0	-1.0044	.5229	.2323	-15	-83
11 Virginis	6	1.41	11.6	6 31.3	19 15.6	+ 0 11.4	-1.2286	.5235	.2353	-33	-84
B. A. C. 4104	6½	1.40	11.0	4 46.2	20 3.1	+ 0 57.5	+0.4275	.5236	.2357	+66	-18
c Virginis	5	1.36	10.8	+ 4 1.7	6 0 24.4	+ 5 10.8	+0.1729	.5246	.2380	+50	-31
65 Virginis	6	1.07	8.0	- 4 15.0	7 7 7.8	+10 56.4	+1.2717	.5360	.2452	+86	+37
66 Virginis	6	+1.07	- 8.0	- 4 29.4	7 42.4	+11 29.9	+1.3763	.5365	-.2451	+86	+53
80 Virginis	6	1.04	7.8	4 44.4	12 54.8	- 7 27.8	+0.3546	.5394	.2444	+61	-22
94 Virginis	6	0.92	6.6	8 16.6	8 3 9.1	+ 6 18.2	+0.4958	.5487	.2393	+69	-15
95 Virginis	6	0.92	6.4	8 41.9	3 20.8	+ 6 29.5	+0.8754	.5487	.2392	+82	+ 7
κ Virginis	4½	+0.90	- 6.1	- 9 40.5	6 7.9	+ 9 10.9	+1.1965	.5508	.2376	+81	+30

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

DECEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
ξ^1 Libræ	6	+0.79	− 5.3	−11 22.4	9 0 24.7	+ 2 49.3	−1.3119	.5656	−.2220	−49	−90
o^1 Libræ	6	0.75	4.2	15 4.9	11 36.3	−10 23.6	−0.0216	.5754	.2075	+33	−42
o^2 Libræ	6	0.74	4.2	14 40.4	12 26.7	− 9 35.1	−0.6016	.5759	.2063	+ 3	−82
ζ^1 Libræ	4	0.74	3.9	16 15.9	14 34.6	− 7 32.0	+0.5419	.5780	.2031	+65	−12
ζ^2 Libræ	7	0.74	3.7	16 59.6	15 8.9	− 7 1.0	+1.1548	.5785	.2023	+73	+29
B. A. C. 5099	7	0.74	3.8	16 48.5	15 21.7	− 6 46.6	+0.9208	.5786	.2018	+73	+11
ζ^3 Libræ	6	+0.73	− 3.9	−16 9.9	15 34.3	− 6 34.6	+0.2446	.5788	−.2016	+47	−27
ζ^4 Libræ	6	0.73	3.8	16 24.8	16 29.4	− 5 41.5	+0.3026	.5797	−.2001	+50	−24
B. A. C. 6490	6½	0.83	− 0.1	25 1.4	12 22 40.0	− 2 47.0	+0.2770	.6195	+.0046	+30	−25
ψ Sagittarii	5	0.86	+ 0.1	25 28.5	13 3 22.1	+ 1 42.7	+0.7769	.6184	.0194	+65	+ 4
B. A. C. 6576	6	0.85	0.3	24 23.9	3 23.3	+ 1 44.0	−0.2798	.6184	.0209	+ 2	−58
χ^1 Sagittarii	6	0.88	0.4	24 45.4	6 54.2	+ 5 5.6	+0.1592	.6173	.0303	+26	−32
χ^2 Sagittarii	6½	+0.88	+ 0.4	−24 39.8	6 56.6	+ 5 8.0	+0.0698	.6173	+.0305	+19	−37
χ^3 Sagittarii	6	0.88	0.5	24 12.7	6 59.9	+ 5 11.1	−0.3728	.6173	.0307	− 3	−65
B. A. C. 6699	6½	0.90	0.7	23 35.3	10 41.9	+ 8 43.5	−0.8523	.6156	.0420	−29	−90
h^1 Sagittarii	6	0.91	0.5	24 59.9	10 48.6	+ 8 49.9	+0.5401	.6156	.0424	+50	−10
h^2 Sagittarii	4½	0.91	0.5	25 9.9	11 3.0	+ 9 3.7	+0.7142	.6153	.0431	+64	+ 1
B. A. C. 6727	6½	0.92	0.8	23 43.2	12 19.7	+10 17.1	−0.6506	.6148	.0470	−16	−90
B. A. C. 6864	6	+0.98	+ 1.4	−23 5.3	20 9.9	− 6 12.8	−0.8147	.6103	+.0701	−24	−90
B. A. C. 6878	6½	0.98	1.4	22 57.3	21 2.2	− 5 22.7	−0.8859	.6101	.0726	−27	−90
4 Capricorni	6	1.02	1.9	22 12.3	14 2 22.8	− 0 15.5	−1.2001	.6063	.0877	−52	−90
B. A. C. 7049	6	1.07	2.0	22 49.0	6 42.6	+ 3 53.5	−0.1910	.6030	.1019	+13	−52
17 Capricorni	6	1.12	2.5	21 58.8	13 5.8	+10 1.0	−0.3339	.5977	.1159	+ 7	−61
B. A. C. 7197	6	1.14	2.3	23 12.3	13 55.3	+10 48.5	+0.9824	.5973	.1181	+67	+18
η Capricorni	5½	+1.18	+ 3.3	−20 21.7	20 14.4	− 7 7.7	−1.0583	.5916	+.1333	−34	−90
χ Capricorni	6	1.21	3.1	21 42.5	21 51.5	− 5 34.4	+0.5052	.5901	.1370	+56	−13
27 Capricorni	6	1.21	3.2	21 4.3	22 15.3	− 5 11.5	−0.0778	.5898	.1378	+23	−45
φ Capricorni	6	1.23	3.3	21 11.0	15 0 40.8	− 2 51.7	+0.3757	.5875	.1432	+49	−20
33 Capricorni	6	1.27	3.4	21 23.8	4 6.3	+ 0 25.8	+1.0937	.5841	.1507	+69	+26
37 Capricorni	6	1.31	3.9	20 39.4	8 28.2	+ 4 37.6	+1.0301	.5799	.1595	+70	+20
ε Capricorni	4½	+1.32	+ 4.1	−20 2.5	9 23.4	+ 5 30.7	+0.5591	.5790	+.1613	+62	−10
κ Capricorni	5	1.33	4.4	19 27.1	11 41.4	+ 7 43.5	+0.3419	.5768	.1657	+49	−22
B. A. C. 7550	6	1.34	4.2	20 12.6	11 55.0	+ 7 56.6	+1.1434	.5768	.1662	+70	+29
29 Aqua., *mult.*	6	1.41	5.3	17 34.9	20 1.5	− 8 14.9	−0.1021	.5689	.1804	+27	−46
56 Aquarii	6	1.52	6.6	15 14.5	16 8 8.3	+ 3 25.8	−0.1846	.5575	.1984	+25	−51
τ^1 Aqua., *mult.*	6	1.61	7.0	14 44.0	15 57.1	+10 58.4	+0.8855	.5505	.2081	+75	+ 8
τ^2 Aquarii	4	+1.62	+ 7.2	−14 16.2	16 48.7	+11 48.3	+0.5899	.5496	+.2089	+70	− 9
74 Aquarii	6	1.63	7.9	12 17.9	18 35.9	−10 28.2	−1.0612	.5483	.2109	−24	−90
ψ^2 Aquarii	4½	1.74	9.1	9 53.0	17 5 58.2	+ 0 31.4	−1.0990	.5267	.2214	−24	−90
ψ^3 Aquarii	5	1.75	9.0	10 18.8	6 27.8	+ 1 0.1	−0.5458	.5390	.2218	+ 9	−76
B. A. C. 8214	6½	1.83	9.9	8 10.5	14 23.8	+ 8 40.7	−0.9868	.5331	.2274	−16	−90
B. A. C. 8274	6½	1.90	10.4	7 5.6	20 43.9	− 9 11.1	−0.6663	.5288	.2309	+ 4	−87
30 Piscium	5	+1.97	+10.6	− 6 43.7	18 3 21.4	− 2 46.0	+0.4895	.5249	+.2337	+69	−15
33 Piscium	5	1.98	10.7	6 25.6	5 2.5	− 1 7.9	+0.5680	.5243	.2343	+75	−11
B. A. C. 17	6½	2.01	10.8	5 57.7	7 31.8	+ 1 16.8	+0.6647	.5229	.2351	+83	− 6
B. A. C. 81	6½	2.09	11.9	2 55.7	14 41.0	+ 8 12.9	−0.8474	.5195	.2367	− 5	−90
15 Ceti	6½	2.16	12.5	− 1 12.6	21 36.8	− 9 3.7	−1.0292	.5169	.2373	−17	−90
26 Ceti, *mult.*	6½	2.31	13.0	+ 0 40.7	19 10 54.0	+ 3 50.0	+0.1070	.5131	.2364	+47	−35
29 Ceti	6½	+2.33	+13.1	+ 1 19.3	13 4.3	+ 5 56.5	−0.0683	.5127	+.2360	+37	−45
33 Ceti	6	2.35	13.2	1 45.7	14 25.1	+ 7 14.9	−0.2230	.5124	.2358	+29	−53
35 Ceti	6½	2.36	13.2	1 47.6	15 27.0	+ 8 15.0	−0.0129	.5123	.2355	+40	−42
f Piscium	6	2.39	13.5	2 56.3	18 11.8	+10 55.0	−0.5954	.5118	.2348	+ 9	−79
B. A. C. 408	6½	2.43	13.8	4 4.0	20 45.7	−10 35.6	−1.2061	.5113	.2340	−30	−86
ν Piscium	4½	+2.53	+13.7	+ 4 50.2	20 6 34.5	− 1 3.8	+0.2439	.5107	+.2331	+55	−27

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

DECEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1871.0. Δα	Red'ns from 1871.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle. *H*	*Y*	*x′*	*y′*	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
64 Ceti	6½	+2.72	+13.9	+ 7 58.1	20 22 16.3	− 9 49.3	+0.3968	.5112	+.2211	+64	−17
ξ¹ Ceti	4½	2.73	13.9	8 14.6	23 7.3	− 8 59.7	+0.2857	.5113	.2205	+57	−23
B. A. C. 728	6½	2.80	14.1	10 15.1	21 4 27.2	− 3 49.1	−0.7333	.5122	.2166	+ 1	−79
B. A. C. 741	6½	2.80	13.8	9 8.0	5 7.8	− 3 9.7	+0.6321	.5121	.2161	+83	− 5
ξ Arietis	5½	2.81	14.0	10 1.7	5 17.0	− 3 0.8	−0.3106	.5121	.2159	+24	−56
B. A. C. 755	6	2.82	13.9	9 59.1	6 17.9	− 2 1.6	−0.0448	.5123	.2153	+38	−41
31 Arietis	5½	+2.89	+14.0	+11 53.5	11 24.0	+ 2 55.5	−1.0380	.5133	+.2109	−18	−76
38 Arietis	5	2.94	13.7	11 54.3	15 44.6	+ 7 8.5	−0.1465	.5142	.2070	+33	−45
B. A. C. 1096	6½	3.26	12.4	17 24.7	22 16 50.8	+ 7 29.9	−1.3286	.5218	.1792	−54	−73
B. A. C. 1240	6	3.39	10.8	17 49.9	23 6 12.7	− 3 32.5	+0.4818	.5267	.1609	+72	− 6
ω¹ Tauri	6	3.45	10.4	19 16.1	10 19.2	+ 0 26.3	−0.4589	.5283	.1546	+16	−57
ω² Tauri	5½	3.51	10.6	20 15.7	14 17.7	+ 4 17.5	−0.9548	.5297	.1485	−15	−70
B. A. C. 1361	6	+3.50	+ 9.2	+18 44.8	18 5.5	+ 7 58.2	+1.2744	.5309	+.1425	+90	+54
ι Tauri	5	3.70	6.6	21 24.3	24 12 27.2	+ 1 44.9	+0.6585	.5380	.1105	+90	+10
105 Tauri	6	3.70	6.2	21 32.1	14 45.4	+ 3 58.7	+0.7643	.5389	.1062	+90	+16
κ Tauri	6	3.74	4.0	21 57.8	20 8.0	+ 9 10.9	+0.8331	.5405	.0960	+90	+21
121 Tauri	6	3.83	4.0	23 57.2	25 3 42.3	− 7 29.7	−0.7063	.5429	.0811	0	−67
B. A. C. 1774	6½	3.82	3.6	23 14.9	5 30.4	− 5 45.1	+0.2201	.5434	.0775	+54	−11
132 Tauri	5½	+3.87	+ 2.8	+24 31.3	10 2.4	− 1 22.0	−0.8664	.5445	+.0683	−10	−66
1 Geminorum	5	3.85	1.3	23 16.1	17 6.5	+ 5 28.1	+0.9594	.5461	.0536	+90	+34
2 Geminorum	6½	3.86	1.0	23 38.9	18 20.8	+ 6 39.9	+0.6015	.5464	.0510	+85	+12
3 Geminorum	6	3.85	0.8	23 7.9	19 43.1	+ 7 59.4	+1.2434	.5467	.0481	+90	+59
5 Geminorum	6	3.89	+ 0.6	24 26.7	20 31.1	+ 8 45.8	−0.1799	.5469	.0464	+30	−29
B. A. C. 2154	6½	3.90	− 1.8	24 41.6	26 8 29.5	− 3 39.6	−0.0529	.5482	.0207	+38	−19
ε Geminorum	3½	+3.92	− 2.4	+25 15.3	11 27.7	− 0 47.4	−0.6263	.5486	+.0143	+ 5	−55
B. A. C. 2238	6	3.87	3.1	23 45.1	15 13.6	+ 2 50.9	+1.0844	.5489	.0058	+90	+47
37 Geminor.	6	3.92	3.5	25 32.0	16 42.0	+ 4 16.3	−0.8902	.5488	+.0028	−12	−65
ω Geminorum	6	3.88	4.1	24 23.7	19 59.9	+ 7 27.6	+0.3717	.5488	−.0044	+65	+ 5
48 Geminor.	6	3.87	5.0	24 20.5	27 0 37.3	+11 55.7	+0.3890	.5487	.0144	+66	+ 5
52 Geminor.	6	3.89	5.3	25 6.2	1 38.2	−11 5.5	−0.4740	.5487	.0166	+14	−44
A Geminorum	5½	+3.88	6.1	25 17.7	5 41.3	− 7 10.5	−0.7714	.5483	−.0255	− 4	−65
B. A. C. 2514	6½	3.83	7.5	24 30.6	12 58.1	− 0 8.3	−0.1414	.5475	.0411	+33	−26
κ Gemi., *mult.*	3½	3.83	8.0	24 42.2	15 23.8	+ 2 12.6	−0.4623	.5473	.0463	+15	−46
μ¹ Cancri	6	3.72	9.8	22 59.9	28 1 35.9	−11 55.7	+0.8459	.5451	.0677	+90	+25
λ Cancri	6	3.71	11.1	24 25.4	8 13.4	− 5 31.2	−1.2260	.5436	.0813	−44	−66
γ Cancri	4½	3.57	12.6	21 55.7	19 1.0	+ 4 55.1	+0.5444	.5407	.1025	+78	+ 4
B. A. C. 3138	6	+3.44	−14.8	+21 48.6	29 9 31.2	− 5 2.7	−1.0074	.5358	−.1291	−19	−68
η Leonis	3½	3.10	17.1	17 23.2	30 11 54.7	− 3 28.9	−0.1226	.5268	.1710	+34	−39
42 Leonis	6	2.99	17.4	15 37.2	19 11.1	+ 3 34.1	+0.5262	.5244	.1810	+75	− 6
B. A. C. 3579	6	2.95	17.9	14 59.8	22 42.1	+ 6 58.6	+0.5633	.5234	.1856	+78	− 5
i Leonis	6	2.93	17.6	14 47.5	31 0 24.5	+ 8 37.9	+0.4656	.5228	.1876	+70	−10
k Leonis	6	+2.85	−18.2	+14 52.2	7 36.8	− 8 22.9	−1.0002	.5208	−.1963	−18	−75

Notes.—B. A. C., British Association Catalogue.
Lal., Lalande's *Histoire Céleste Française*. Bailey's Ed.
Rumk., Rumker's Catalogue.
Weis., Weisse's *Positiones Mediæ Stellarum Fixarum*.

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1871.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
Jan. 1	B. A. C. 987	6	0 14	5 29	338	290	1 17	6 33	83	46	1 3
2	B. A. C. 1272	6	7 0	12 10	282	333	8 18	13 28	105	160	1 18
3	*l* Tauri*	5½	12 39	17 45	328	13	13 9	18 15	40	82	0 30
4	ζ Tauri	3½	23 44	4 47	267	214	0 42	5 45	125	69	0 58
7	η Cancri	6	8 48	13 39	165	179	Star 0′.6	south of	☽'s	limb.	
7	39 Cancri‖	6	12 48	17 38	222	278	13 43	18 33	101	156	0 55
7	40 Cancri‖	6	12 54	17 44	214	271	13 45	18 35	108	163	0 51
31	ζ Tauri‡	3½	12 26	15 42	220	269	13 0	16 16	141	187	0 34
Feb. 1	η Geminor.	3½	4 17	6 30	326	270	5 17	7 30	61	12	1 0
1	μ Geminor.	3	8 32	11 44	290	344	9 46	12 58	65	122	1 14
3	μ^2 Cancri	5	5 37	8 42	264	211	7 3	19 8	88	55	1 26
3	B. A. C. 2788	6½	13 53	16 56	179	233	Star 1′.3	south of	☽'s	limb.	
7	ν Virginis	4½	8 33	11 22	237	191	9 48	12 36	69	35	1 15
9	80 Virginis	6	13 13	15 53	207	203	14 22	17 2	87	101	1 9
11	o^2 Libræ	6	12 35	15 7	244	210	13 46	16 18	36	16	1 12
12	B. A. C. 5408*	6½	10 5	12 33	259	208	10 59	13 27	58	9	0 54
24	B. A. C. 830	6	7 7	8 49	231	283	7 42	9 24	167	219	0 36
26	Rumk. 1162	6	9 50	11 24	296	350	10 48	12 22	80	130	0 58
27	*l* Tauri	5½	8 30	10 1	186	241	Star 2′.9	south of	☽'s	limb.	
28	141 Tauri	6	9 29	10 55	292	349	10 36	12 2	65	122	1 6
28	B. A. C. 1970‡	6½	13 17	14 42	271	318	14 8	15 34	86	128	0 51
Mar. 7	B. A. C. 4104	6½	5 55	6 53	285	234	6 40	7 39	31	340	0 45
12	B. A. C. 5758	6	15 24	16 2	329	309	15 40	16 17	353	336	0 16
17	29 Aqu., *mult.*†	6	16 29	16 46	266	216	17 30	17 48	118	72	1 2
23	B. A. C. 741	6½	8 7	8 3	352	44	8 34	8 30	44	95	0 27
April 5	80 Virginis†	6	7 37	6 41	193	142	8 25	7 30	102	53	0 48
24	6 Geminor.	6	9 20	7 10	249	306	10 32	8 22	105	162	1 11
26	7 Cancri	6½	13 5	10 46	256	312	14 4	11 46	74	127	1 0
26	μ^2 Cancri‡	5	15 1	12 42	220	269	15 42	13 23	115	160	0 41
May 4	o^1 Libræ	6	19 10	16 19	342	300	Star 1′.1	north of	☽'s	limb.	
5	ν^1 Scorpii	7	13 17	10 23	208	175	14 12	11 18	101	77	0 55
5	ν^2 Scorpii	4	13 19	10 25	206	173	14 12	11 18	103	79	0 53
5	ψ Ophiuchi	5	19 46	16 50	307	347	20 29	17 34	30	75	0 43
8	χ^3 Sagittarii*	6½	14 21	11 14	187	138	14 35	11 29	161	114	0 15
8	χ^3 Sagittarii†	6	14 5	10 58	309	259	14 48	11 42	40	354	0 43
9	B. A. C. 7049†	6	15 22	12 11	309	261	16 12	13 2	55	11	0 51
13	33 Piscium	5	19 49	16 22	348	301	20 32	17 5	64	21	0 44
June 3	4 Sagittarii	5	20 0	15 19	357	23	Star 0′.8	north of	☽'s	limb.	
3	7 Sagittarii	6	21 2	16 13	232	268	21 54	17 4	129	172	0 52
3	9 Sagittarii	4½	21 43	16 53	203	244	22 6	17 17	160	203	0 24
4	B. A. C. 6490	6½	17 32	12 39	223	205	18 28	13 35	133	127	0 56
6	χ Capricorni	6	17 38	12 37	221	184	18 17	13 16	158	125	0 39
24	ν Virginis	4½	15 16	9 5	266	314	16 15	10 4	36	87	0 59
28	o^1 Libræ	6	19 20	12 53	313	358	19 51	13 24	12	59	0 31
29	ν^1 Scorpii	7	14 14	7 43	226	202	15 24	8 53	83	74	1 10
29	ν^2 Scorpii	4	14 15	7 44	224	201	15 24	8 53	85	76	1 9
29	ψ Ophiuchi‡	5	20 56	14 24	327	14	21 42	15 10	78	128	0 46
July 4	ε Capricorni†	4½	16 38	9 48	225	177	17 15	10 24	155	111	0 37

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1871.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
July 4	κ Capricorni	5	19 26	12 35	296	268	20 45	13 54	102	91	1 19
10	B. A. C. 830	6	23 4	15 49	283	234	0 18	17 2	141	100	1 13
24	94 Virginis‡	6	18 21	11 12	254	304	19 19	12 9	65	116	0 57
28	4 Sagittarii	5	20 2	11 36	358	24	Star 2′.4	north of	☽'s	limb.	
29	B. A. C. 6490	6½	18 4	9 35	230	220	19 7	10 37	128	131	1 2
31	χ Capricorni	6	17 31	8 54	211	172	17 57	9 20	168	132	0 26
31	φ Capricorni	6	21 15	12 37	250	251	22 14	13 36	153	167	0 59
Aug. 3	30 Piscium	5	23 1	14 11	325	311	0 18	15 28	103	110	1 17
3	33 Piscium	5	1 20	16 30	271	292	2 24	17 34	157	190	1 4
22	ζ^4 Libræ	6	16 53	6 49	278	297	18 0	7 57	38	70	1 7
28	κ Capricorni	5	18 29	8 1	285	249	19 45	9 17	108	84	1 16
Sept. 5	B. A. C. 1361	6	22 0	11 0	290	239	22 59	11 59	113	58	0 59
5	ε Tauri	3½	23 58	12 58	239	184	0 38	13 38	170	115	0 41
6	n Tauri	6	1 6	14 2	20	323	Star 0′.8	north of	☽'s	limb.	
7	3 Geminor.	6	23 59	12 51	277	224	0 59	13 52	110	53	1 1
21	B. A. C. 6217	6½	20 43	8 41	257	287	21 47	9 45	128	167	1 4
22	χ^1 Sagittarii	6	21 37	9 31	313	341	22 38	10 32	69	106	1 1
22	χ^2 Sagittarii	6½	21 54	9 48	340	10	22 32	10 26	43	79	0 38
25	56 Aquarii‡	6	3 15	14 56	321	9	4 7	15 48	91	142	0 52
27	30 Piscium	5	19 58	7 32	326	281	21 0	8 34	89	51	1 2
27	33 Piscium	5	21 58	9 32	293	264	23 17	10 51	134	123	1 19
28	26 Ceti, *mult.*	6½	5 24	16 54	294	342	6 27	17 56	119	170	1 2
Oct. 3	ι Tauri	5	3 14	14 23	277	229	4 42	15 52	123	115	1 29
21	χ Capricorni	6	21 47	7 47	295	305	23 6	9 6	110	136	1 19
21	φ Capricorni‡	6	1 46	11 45	255	301	2 32	12 31	149	199	0 46
27	64 Ceti	6½	23 35	9 11	349	307	0 30	10 6	80	49	0 55
29	B. A. C. 1240	6	8 45	18 12	248	303	9 39	19 6	134	188	0 54
31	B. A. C. 1774	6½	7 7	16 26	297	343	8 28	17 47	73	129	1 21
Nov. 2	48 Geminor.	6	3 47	12 59	7	313	Star 1′.0	north of	☽'s	limb.	
3	μ^1 Cancri	6	4 35	13 43	204	152	4 59	14 7	158	104	0 23
15	B. A. C. 6369‡	6	22 50	7 13	344	28	23 14	7 36	30	77	0 24
17	B. A. C. 7197	6	20 53	5 7	241	243	21 46	6 0	157	172	0 53
19	τ^2 Aquarii	4	2 54	10 59	237	282	3 24	11 29	179	226	0 30
27	105 Tauri	6	1 50	9 24	274	220	2 48	10 22	125	70	0 58
28	2 Geminor.	6½	4 54	12 23	217	160	5 26	12 56	172	119	0 32
29	ω Geminor.	6	5 57	13 22	245	195	7 20	14 45	120	107	1 23
Dec. 1	γ Cancri	4½	6 37	13 55	206	149	7 13	14 30	146	89	0 36
3	42 Leonis	6	6 58	14 8	206	154	7 36	14 45	127	74	0 38
3	B. A. C. 3579	6	10 4	17 13	167	129	10 22	17 31	143	109	0 18
3	i Leonis	6	10 30	17 39	233	235	11 56	19 5	64	97	1 26
18	B. A. C. 17	6½	1 20	7 31	278	298	2 28	8 39	152	186	1 8
19	26 Ceti, *mult.*	6½	5 59	12 6	328	18	6 51	12 58	84	135	0 52
23	B. A. C. 1240	6	1 48	7 40	3	308	2 12	8 4	47	352	0 24

* Whole occultation below the horizon of Washington.

† Immersion below the horizon of Washington.

‡ Emersion below the horizon of Washington.

‖ Cluster of Præsepe.

The *Angles of Position*, for the points of contact, are for *direct* vision, and are reckoned from the Moon's *North Point* and from its *Vertex* towards the West. For *inverted* image, add 180° to the angles given.

WASHINGTON MEAN TIME.

JANUARY.

			d	h	m	s				d	h	m	s
III.	Occult.	Disapp. W.	1	6	6		II.	Eclipse	Reapp.	9	4	51	41.1
I.	Occult.	Disapp. W.	1	9	23		I.	Transit	Ingress W.	9	8	28	
III.	Eclipse	Reapp. W.	1	10	35	39.6	I.	Shadow	Ingress W.	9	9	8	
I.	Eclipse	Reapp. W.	1	12	6	0.4	I.	Transit	Egress W.	9	10	42	
II.	Occult.	Disapp.	1	22	39		I.	Shadow	Egress W.	9	11	23	
II.	Eclipse	Reapp.	2	2	15	46.3	I.	Occult.	Disapp. W.	10	5	35	
I.	Transit	Ingress W.	2	6	42		I.	Eclipse	Reapp. W.	10	8	29	59.8
I.	Shadow	Ingress W.	2	7	13		II.	Transit	Ingress	10	19	5	
I.	Transit	Egress W.	2	8	57		II.	Shadow	Ingress	10	20	29	
I.	Shadow	Egress W.	2	9	29		II.	Transit	Egress	10	21	42	
I.	Occult.	Disapp.	3	3	49		II.	Shadow	Egress	10	23	8	
I.	Eclipse	Reapp. W.	3	6	34	44.5	I.	Transit	Ingress	11	2	54	
II.	Transit	Ingress W.	3	16	47		I.	Shadow	Ingress	11	3	37	
II.	Shadow	Ingress	3	17	51		I.	Transit	Egress	11	5	9	
II.	Transit	Egress	3	19	23		I.	Shadow	Egress W.	11	5	52	
II.	Shadow	Egress	3	20	31		III.	Transit	Ingress	11	23	13	
I.	Transit	Ingress	4	1	9		I.	Occult.	Disapp.	12	0	2	
I.	Shadow	Ingress	4	1	42		III.	Transit	Egress	12	1	47	
I.	Transit	Egress	4	3	24		III.	Shadow	Ingress	12	2	8	
I.	Shadow	Egress	4	3	57		I.	Eclipse	Reapp.	12	2	58	53.5
III.	Transit	Ingress	4	19	51		III.	Shadow	Egress	12	4	48	
III.	Shadow	Ingress	4	22	8		II.	Occult.	Disapp. W.	12	14	5	
I.	Occult.	Disapp.	4	22	16		II.	Eclipse	Reapp.	12	18	9	39.2
III.	Transit	Egress	4	22	24		I.	Transit	Ingress	12	21	21	
III.	Shadow	Egress	5	0	47		I.	Shadow	Ingress	12	22	6	
I.	Eclipse	Reapp.	5	1	3	36.1	I.	Transit	Egress	12	23	36	
II.	Occult.	Disapp. W.	5	11	47		I.	Shadow	Egress	13	0	21	
II.	Eclipse	Reapp. W.	5	15	33	47.1	I.	Occult.	Disapp.	13	18	28	
I.	Transit	Ingress	5	19	35		I.	Eclipse	Reapp.	13	21	27	41.9
I.	Shadow	Ingress	5	20	11		II.	Transit	Ingress W.	14	8	15	
I.	Transit	Egress	5	21	50		II.	Shadow	Ingress W.	14	9	47	
I.	Shadow	Egress	5	22	26		II.	Transit	Egress W.	14	10	52	
I.	Occult	Disapp.	6	16	42		II.	Shadow	Egress W.	14	12	27	
I.	Eclipse	Reapp.	6	19	32	22.7	I.	Transit	Ingress W.	14	15	47	
II.	Transit	Ingress W.	7	5	55		I.	Shadow	Ingress	14	16	34	
II.	Shadow	Ingress W.	7	7	10		I.	Transit	Egress	14	18	2	
II.	Transit	Egress W.	7	8	32		I.	Shadow	Egress	14	18	50	
II.	Shadow	Egress W.	7	9	49		III.	Occult.	Disapp. W.	15	12	50	
I.	Transit	Ingress W.	7	14	1		I.	Occult.	Disapp. W.	15	12	55	
I.	Shadow	Ingress W.	7	14	40		III.	Occult.	Reapp. W.	15	15	25	
I.	Transit	Egress W.	7	16	16		I.	Eclipse	Reapp.	15	15	56	35.1
I.	Shadow	Egress	7	16	55		III.	Eclipse	Disapp.	15	16	9	2.6
III.	Occult.	Disapp. W.	8	9	26		III.	Eclipse	Reapp.	15	18	39	15.2
I.	Occult.	Disapp. W.	8	11	9		II.	Occult.	Disapp.	16	3	14	
III.	Occult.	Reapp. W.	8	11	59		II.	Eclipse	Reapp. W.	16	7	27	32.9
III.	Eclipse	Disapp. W.	8	12	8	4.7	I.	Transit	Ingress W.	16	10	14	
I.	Eclipse	Reapp. W.	8	14	1	13.9	I.	Shadow	Ingress W.	16	11	3	
III.	Eclipse	Reapp. W.	8	14	37	7.7	I.	Transit	Egress W.	16	12	29	
II.	Occult.	Disapp.	9	0	55		I.	Shadow	Egress W.	16	13	18	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

JANUARY.

			d	h	m	s
I.	Occult.	Disapp. W.	17	7	22	
I.	Eclipse	Reapp. W.	17	10	25	22.8
II.	Transit	Ingress	17	21	26	
II.	Shadow	Ingress	17	23	6	
II.	Transit	Egress	18	0	3	
II.	Shadow	Egress	18	1	45	
I.	Transit	Ingress	18	4	40	
I.	Shadow	Ingress W.	18	5	31	
I.	Transit	Egress W.	18	6	55	
I.	Shadow	Egress W.	18	7	46	
I.	Occult.	Disapp.	19	1	49	
III.	Transit	Ingress	19	2	38	
I.	Eclipse	Reapp.	19	4	54	18.4
III.	Transit	Egress	19	5	13	
III.	Shadow	Ingress W.	19	6	8	
III.	Shadow	Egress W.	19	8	49	
II.	Occult.	Disapp.	19	16	24	
II.	Eclipse	Reapp.	19	20	45	29.2
I.	Transit	Ingress	19	23	7	
I.	Shadow	Ingress	20	0	0	
I.	Transit	Egress	20	1	22	
I.	Shadow	Egress	20	2	15	
I.	Occult.	Disapp.	20	20	16	
I.	Eclipse	Reapp.	20	23	23	8.3
II.	Transit	Ingress W.	21	10	36	
II.	Shadow	Ingress W.	21	12	24	
II.	Transit	Egress W.	21	13	14	
II.	Shadow	Egress W.	21	15	4	
I.	Transit	Ingress	21	17	34	
I.	Shadow	Ingress	21	18	29	
I.	Transit	Egress	21	19	49	
I.	Shadow	Egress	21	20	44	
I.	Occult.	Disapp. W.	22	14	43	
III.	Occult.	Disapp.	22	16	18	
I.	Eclipse	Reapp.	22	17	52	3.3
III.	Occult.	Reapp.	22	18	54	
III.	Eclipse	Disapp.	22	20	9	30.7
III.	Eclipse	Reapp.	22	22	40	52.5
II.	Occult.	Disapp. W.	23	5	34	
II.	Eclipse	Reapp. W.	23	10	3	22.8
I.	Transit	Ingress W.	23	12	1	
I.	Shadow	Ingress W.	23	12	57	
I.	Transit	Egress W.	23	14	16	
I.	Shadow	Egress W.	23	15	12	
I.	Occult.	Disapp. W.	24	9	10	
I.	Eclipse	Reapp. W.	24	12	20	52.5
II.	Transit	Ingress	24	23	48	
II.	Shadow	Ingress	25	1	43	
II.	Transit	Egress	25	2	26	
II.	Shadow	Egress	25	4	23	
I.	Transit	Ingress W.	25	6	28	
I.	Shadow	Ingress W.	25	7	26	
I.	Transit	Egress W.	25	8	43	
I.	Shadow	Egress W.	25	9	41	
I.	Occult.	Disapp.	26	3	37	
III.	Transit	Ingress W.	26	6	8	
I.	Eclipse	Reapp. W.	26	6	49	49.6
III.	Transit	Egress W.	26	8	45	
III.	Shadow	Ingress W.	26	10	8	
III.	Shadow	Egress W.	26	12	50	
II.	Occult.	Disapp.	26	18	45	
II.	Eclipse	Reapp.	26	23	21	16.9
I.	Transit	Ingress	27	0	55	
I.	Shadow	Ingress	27	1	55	
I.	Transit	Egress	27	3	10	
I.	Shadow	Egress	27	4	10	
I.	Occult.	Disapp.	27	22	4	
I.	Eclipse	Reapp. W.	28	1	18	41.2
II.	Transit	Ingress W.	28	13	0	
II.	Shadow	Ingress W.	28	15	2	
II.	Transit	Egress	28	15	38	
II.	Shadow	Egress	28	17	42	
I.	Transit	Ingress	28	19	22	
I.	Shadow	Ingress	28	20	23	
I.	Transit	Egress	28	21	37	
I.	Shadow	Egress	28	22	38	
I.	Occult.	Disapp.	29	16	31	
I.	Eclipse	Reapp.	29	19	47	37.9
III.	Occult.	Disapp.	29	19	52	
III.	Occult.	Reapp.	29	22	29	
III.	Eclipse	Disapp.	30	0	10	3.1
III.	Eclipse	Reapp.	30	2	42	33.9
II.	Occult.	Disapp. W.	30	7	57	
II.	Eclipse	Reapp. W.	30	12	39	9.8
I.	Transit	Ingress W.	30	13	49	
I.	Shadow	Ingress	30	14	52	
I.	Transit	Egress	30	16	4	
I.	Shadow	Egress	30	17	7	
I.	Occult.	Disapp. W.	31	10	59	
I.	Eclipse	Reapp. W.	31	14	16	28.4

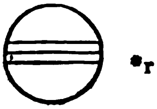
W.—Visible at Washington.

WASHINGTON MEAN TIME.

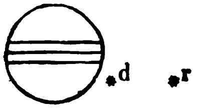
JANUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

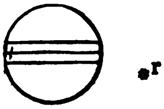
I.



III.



II.



IV. Not Eclipsed.

FEBRUARY.

				d	h	m	s
II.	Transit	Ingress		1	2	13	
II.	Shadow	Ingress		1	4	21	
II.	Transit	Egress		1	4	51	
II.	Shadow	Egress	W.	1	7	1	
I.	Transit	Ingress	W.	1	8	16	
I.	Shadow	Ingress	W.	1	9	21	
I.	Transit	Egress	W.	1	10	31	
I.	Shadow	Egress	W.	1	11	36	
I.	Occult.	Disapp.		2	5	26	
I.	Eclipse	Reapp.	W.	2	8	45	26.8
III.	Transit	Ingress	W.	2	9	44	
III.	Transit	Egress	W.	2	12	21	
III.	Shadow	Ingress	W.	2	14	8	
III.	Shadow	Egress		2	16	52	
II.	Occult.	Disapp.		2	21	9	
II.	Eclipse	Reapp.		3	1	57	2.0
I.	Transit	Ingress		3	2	43	
I.	Shadow	Ingress		3	3	50	
I.	Transit	Egress		3	4	58	
I.	Shadow	Egress	W.	3	6	5	
I.	Occult.	Disapp.		3	23	54	
I.	Eclipse	Reapp.		4	3	14	19.7
II.	Transit	Ingress		4	15	29	
II.	Shadow	Ingress		4	17	40	
II.	Transit	Egress		4	18	5	
II.	Shadow	Egress		4	20	20	
I.	Transit	Ingress		4	21	11	
I.	Shadow	Ingress		4	22	19	
I.	Transit	Egress		4	23	26	
I.	Shadow	Egress		5	0	34	
I.	Occult.	Disapp.		5	18	21	
I.	Eclipse	Reapp.		5	21	43	17.8
III.	Occult.	Disapp.		5	23	29	
III.	Occult.	Reapp.		6	2	8	
III.	Eclipse	Disapp.		6	4	10	21.9
III.	Eclipse	Reapp.	W.	6	6	44	1.5
II.	Occult.	Disapp.	W.	6	10	21	
II.	Eclipse	Reapp.		6	15	14	54.3
I.	Transit	Ingress		6	15	39	
I.	Shadow	Ingress		6	16	48	
I.	Transit	Egress		6	17	54	
I.	Shadow	Egress		6	19	3	
I.	Occult.	Disapp.		7	12	49	
I.	Eclipse	Reapp.		7	16	12	9.3
II.	Transit	Ingress		8	4	42	
II.	Shadow	Ingress	W.	8	6	59	
II.	Transit	Egress	W.	8	7	20	
II.	Shadow	Egress	W.	8	9	40	
I.	Transit	Ingress	W.	8	10	6	
I.	Shadow	Ingress	W.	8	11	16	
I.	Transit	Egress	W.	8	12	21	
I.	Shadow	Egress	W.	8	13	31	
I.	Occult.	Disapp.	W.	9	7	17	
I.	Eclipse	Reapp.	W.	9	10	41	8.8
III.	Transit	Ingress	W.	9	13	24	
III.	Transit	Egress		9	16	3	
III.	Shadow	Ingress		9	18	9	
III.	Shadow	Egress		9	20	54	
II.	Occult.	Disapp.		9	23	34	
II.	Eclipse	Reapp.		10	4	32	45.0
I.	Transit	Ingress		10	4	34	
I.	Shadow	Ingress	W.	10	5	45	
I.	Transit	Egress	W.	10	6	49	
I.	Shadow	Egress	W.	10	8	0	
I.	Occult.	Disapp.		11	1	45	
I.	Eclipse	Reapp.		11	5	10	2.6

W.—Visible at Washington.

WASHINGTON MEAN TIME.

FEBRUARY.

			d	h	m	s
II.	Transit	Ingress	11	17	57	
II.	Shadow	Ingress	11	20	18	
II.	Transit	Egress	11	20	35	
II.	Shadow	Egress	11	23	0	
I.	Transit	Ingress	11	23	2	
I.	Shadow	Ingress	12	0	14	
I.	Transit	Egress	12	1	17	
I.	Shadow	Egress	12	2	29	
I.	Occult.	Disapp.	12	20	13	
I.	Eclipse	Reapp.	12	23	39	1.8
III.	Occult.	Disapp.	13	3	12	
III.	Occult.	Reapp. W.	13	5	52	
III.	Eclipse	Disapp. W.	13	8	10	46.9
III.	Eclipse	Reapp. W.	13	10	45	34.9
II.	Occult.	Disapp. W.	13	12	48	
I.	Transit	Ingress	13	17	30	
II.	Eclipse	Reapp.	13	17	50	36.1
I.	Shadow	Ingress	13	18	43	
I.	Transit	Egress	13	19	45	
I.	Shadow	Egress	13	20	58	
I.	Occult.	Disapp.	14	14	41	
I.	Eclipse	Reapp.	14	18	7	54.2
II.	Transit	Ingress W.	15	7	12	
II.	Shadow	Ingress W.	15	9	37	
II.	Transit	Egress W.	15	9	51	
I.	Transit	Ingress W.	15	11	58	
II.	Shadow	Egress W.	15	12	19	
I.	Shadow	Ingress W.	15	13	12	
I.	Transit	Egress	15	14	13	
I.	Shadow	Egress	15	15	27	
I.	Occult.	Disapp. W.	16	9	9	
I.	Eclipse	Reapp. W.	16	12	36	54.4
III.	Transit	Ingress	16	17	9	
III.	Transit	Egress	16	19	50	
III.	Shadow	Ingress	16	22	9	
III.	Shadow	Egress	17	0	55	
II.	Occult.	Disapp.	17	2	3	
I.	Transit	Ingress W.	17	6	26	
II.	Eclipse	Reapp. W.	17	7	8	22.4
I.	Shadow	Ingress W.	17	7	41	
I.	Transit	Egress W.	17	8	41	
I.	Shadow	Egress W.	17	9	56	
I.	Occult.	Disapp.	18	3	37	
I.	Eclipse	Reapp. W.	18	7	5	49.0
II.	Transit	Ingress	18	20	28	
II.	Shadow	Ingress	18	22	56	
II.	Transit	Egress	18	23	7	
I.	Transit	Ingress	19	0	54	
II.	Shadow	Egress	19	1	38	
I.	Shadow	Ingress	19	2	9	
I.	Transit	Egress	19	3	9	
I.	Shadow	Egress	19	4	24	
I.	Occult.	Disapp.	19	22	5	
I.	Eclipse	Reapp.	20	1	34	49.0
III.	Occult.	Disapp. W.	20	7	0	
III.	Occult.	Reapp. W.	20	9	41	
III.	Eclipse	Disapp. W.	20	12	11	41.0
III.	Eclipse	Reapp.	20	14	47	37.2
II.	Occult.	Disapp.	20	15	18	
I.	Transit	Ingress	20	19	22	
II.	Eclipse	Reapp.	20	20	26	14.9
I.	Shadow	Ingress	20	20	38	
I.	Transit	Egress	20	21	37	
I.	Shadow	Egress	20	22	53	
I.	Occult.	Disapp.	21	16	33	
I.	Eclipse	Reapp.	21	20	3	41.9
II.	Transit	Ingress W.	22	9	44	
II.	Shadow	Ingress W.	22	12	15	
II.	Transit	Egress W.	22	12	24	
I.	Transit	Ingress	22	13	50	
II.	Shadow	Egress	22	14	57	
I.	Shadow	Ingress	22	15	7	
I.	Transit	Egress	22	16	5	
I.	Shadow	Egress	22	17	22	
I.	Occult.	Disapp.	23	11	2	
I.	Eclipse	Reapp.	23	14	32	42.8
III.	Transit	Ingress	23	20	59	
III.	Transit	Egress	23	23	41	
III.	Shadow	Ingress	24	2	10	
II.	Occult.	Disapp.	24	4	33	
III.	Shadow	Egress	24	4	56	
I.	Transit	Ingress W.	24	8	18	
I.	Shadow	Ingress W.	24	9	35	
II.	Eclipse	Reapp. W.	24	9	44	2.7
I.	Transit	Egress W.	24	10	33	
I.	Shadow	Egress W.	24	11	51	
I.	Occult.	Disapp.	25	5	31	
I.	Eclipse	Reapp.	25	9	1	37.9
II.	Transit	Ingress	25	23	1	
II.	Shadow	Ingress	26	1	34	
II.	Transit	Egress	26	1	41	
I.	Transit	Ingress	26	2	46	
I.	Shadow	Ingress	26	4	4	
II.	Shadow	Egress	26	4	16	
I.	Transit	Egress	26	5	1	
I.	Shadow	Egress W.	26	6	20	
I.	Occult.	Disapp.	26	23	59	
I.	Occult.	Reapp.	27	3	30	38.4

W.—Visible at Washington.

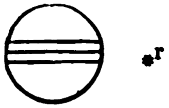
WASHINGTON MEAN TIME.

FEBRUARY.

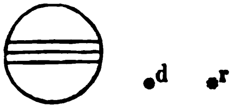
			d	h	m	s				d	h	m	s
III.	Occult.	Disapp. W.	27	10	53		I.	Shadow	Ingress	27	22	33	
III.	Occult.	Reapp.	27	13	36		II.	Eclipse	Reapp.	27	23	1	51.4
III.	Eclipse	Disapp.	27	16	12	30.0	I.	Transit	Egress	27	23	30	
II.	Occult.	Disapp.	27	17	50		I.	Shadow	Egress	28	0	49	
III.	Eclipse	Reapp.	27	18	49	34.2	I.	Occult.	Disapp.	28	18	28	
I.	Transit	Ingress	27	21	15		I.	Eclipse	Reapp.	28	21	59	31.5

Phases of the Eclipses of the Satellites for an Inverting Telescope.

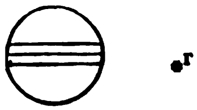
I.



III.



II.



IV. Not Eclipsed.

MARCH.

			d	h	m	s				d	h	m	s
II.	Transit	Ingress W.	1	12	19		I.	Shadow	Ingress	5	5	59	
II.	Shadow	Ingress	1	14	53		II.	Shadow	Egress W.	5	6	54	
II.	Transit	Egress	1	14	59		I.	Transit	Egress W.	5	6	55	
I.	Transit	Ingress	1	15	43		I.	Shadow	Egress W.	5	8	15	
I.	Shadow	Ingress	1	17	1		I.	Occult.	Disapp.	6	1	54	
II.	Shadow	Egress	1	17	35		I.	Eclipse	Reapp.	6	5	26	28.8
I.	Transit	Egress	1	17	58		III.	Occult.	Disapp.	6	14	51	
I.	Shadow	Egress	1	19	17		III.	Occult.	Reapp.	6	17	35	
I.	Occult.	Disapp.	2	12	56		III.	Eclipse	Disapp.	6	20	13	52.9
I.	Eclipse	Reapp.	2	16	28	32.6	II.	Occult.	Disapp.	6	20	23	
III.	Transit	Ingress	3	0	53		III.	Eclipse	Reapp.	6	22	52	4.7
III.	Transit	Egress	3	3	36		I.	Transit	Ingress	6	23	9	
III.	Shadow	Ingress W.	3	6	10		I.	Shadow	Ingress	7	0	28	
II.	Occult.	Disapp. W.	3	7	6		I.	Transit	Egress	7	1	24	
III.	Shadow	Egress W.	3	8	57		II.	Eclipse	Reapp.	7	1	37	25.5
I.	Transit	Ingress W.	3	10	11		I.	Shadow	Egress	7	2	44	
I.	Shadow	Ingress W.	3	11	30		I.	Occult.	Disapp.	7	20	23	
II.	Eclipse	Reapp. W.	3	12	19	38.2	I.	Eclipse	Reapp.	7	23	55	22.0
I.	Transit	Egress W.	3	12	26		II.	Transit	Ingress	8	14	56	
I.	Shadow	Egress	3	13	46		II.	Shadow	Ingress	8	17	31	
I.	Occult.	Disapp. W.	4	7	25		II.	Transit	Egress	8	17	37	
I.	Eclipse	Reapp. W.	4	10	57	27.8	I.	Transit	Ingress	8	17	38	
II.	Transit	Ingress	5	1	37		I.	Shadow	Ingress	8	18	57	
II.	Shadow	Ingress	5	4	12		I.	Transit	Egress	8	19	53	
II.	Transit	Egress	5	4	17		II.	Shadow	Egress	8	20	13	
I.	Transit	Ingress	5	4	40		I.	Shadow	Egress	8	21	13	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

MARCH.

			d	h	m	s
I.	Occult.	Disapp.	9	14	52	
I.	Eclipse	Reapp.	9	18	24	23.1
III.	Transit	Ingress	10	4	52	
III.	Transit	Egress W.	10	7	37	
II.	Occult.	Disapp. W.	10	9	41	
III.	Shadow	Ingress W.	10	10	10	
I.	Transit	Ingress W.	10	12	7	
III.	Shadow	Egress	10	12	58	
I.	Shadow	Ingress	10	13	26	
I.	Transit	Egress	10	14	22	
II.	Eclipse	Reapp.	10	14	55	11.4
I.	Shadow	Egress	10	15	42	
I.	Occult.	Disapp. W.	11	9	21	
I.	Eclipse	Reapp.	11	12	53	18.4
II.	Transit	Ingress	12	4	16	
I.	Transit	Ingress W.	12	6	36	
II.	Shadow	Ingress W.	12	6	50	
II.	Transit	Egress W.	12	6	57	
I.	Shadow	Ingress W.	12	7	54	
I.	Transit	Egress W.	12	8	51	
II.	Shadow	Egress W.	12	9	33	
I.	Shadow	Egress W.	12	10	10	
I.	Occult.	Disapp.	13	3	50	
I.	Eclipse	Reapp. W.	13	7	22	19.4
III.	Occult.	Disapp.	13	18	53	
III.	Occult.	Reapp.	13	21	38	
II.	Occult.	Disapp.	13	22	59	
III.	Eclipse	Disapp.	14	0	14	37.6
I.	Transit	Ingress	14	1	5	
I.	Shadow	Ingress	14	2	23	
III.	Eclipse	Reapp.	14	2	53	56.8
I.	Transit	Egress	14	3	20	
II.	Eclipse	Reapp.	14	4	12	57.4
I.	Shadow	Egress	14	4	39	
I.	Occult.	Disapp.	14	22	19	
I.	Eclipse	Reapp.	15	1	51	12.4
II.	Transit	Ingress	15	17	36	
I.	Transit	Ingress	15	19	34	
II.	Shadow	Ingress	15	20	10	
II.	Transit	Egress	15	20	17	
I.	Shadow	Ingress	15	20	52	
I.	Transit	Egress	15	21	49	
II.	Shadow	Egress	15	22	53	
I.	Shadow	Egress	15	23	8	
I.	Occult.	Disapp.	16	16	48	
I.	Eclipse	Reapp.	16	20	20	13.5
III.	Transit	Ingress W.	17	8	55	
III.	Transit	Egress W.	17	11	41	
II.	Occult.	Disapp.	17	12	18	
I.	Transit	Ingress	17	14	3	
III.	Shadow	Ingress	17	14	10	
I.	Shadow	Ingress	17	15	21	
I.	Transit	Egress	17	16	18	
III.	Shadow	Egress	17	17	0	
II.	Eclipse	Reapp.	17	17	30	42.8
I.	Shadow	Egress	17	17	37	
I.	Occult.	Disapp.	18	11	17	
I.	Eclipse	Reapp.	18	14	49	8.5
II.	Transit	Ingress W.	19	6	56	
I.	Transit	Ingress W.	19	8	32	
II.	Shadow	Ingress W.	19	9	29	
II.	Transit	Egress W.	19	9	39	
I.	Shadow	Ingress W.	19	9	50	
I.	Transit	Egress W.	19	10	47	
I.	Shadow	Egress	19	12	6	
II.	Shadow	Egress	19	12	12	
I.	Occult.	Disapp.	20	5	47	
I.	Eclipse	Reapp. W.	20	9	18	9.3
III.	Occult.	Disapp.	20	22	58	
II.	Occult.	Disapp.	21	1	36	
III.	Occult.	Reapp.	21	1	44	
I.	Transit	Ingress	21	3	1	
III.	Eclipse	Disapp.	21	4	15	18.1
I.	Shadow	Ingress	21	4	19	
I.	Transit	Egress	21	5	17	
I.	Shadow	Egress W.	21	6	35	
II.	Eclipse	Reapp. W.	21	6	48	27.8
III.	Eclipse	Reapp. W.	21	6	55	44.7
I.	Occult	Disapp.	22	0	16	
I.	Eclipse	Reapp.	22	3	47	1.9
II.	Transit	Ingress	22	20	17	
I.	Transit	Ingress	22	21	30	
I.	Shadow	Ingress	22	22	47	
II.	Shadow	Ingress	22	22	48	
II.	Transit	Egress	22	22	58	
I.	Transit	Egress	22	23	46	
I.	Shadow	Egress	23	1	3	
II.	Shadow	Egress	23	1	31	
I.	Occult.	Disapp.	23	18	45	
I.	Eclipse	Reapp.	23	22	16	2.6
III.	Transit	Ingress	24	13	2	
II.	Occult.	Disapp.	24	14	56	
III.	Transit	Egress	24	15	49	
I.	Transit	Ingress	24	15	59	
I.	Shadow	Ingress	24	17	16	
III.	Shadow	Ingress	24	18	10	
I.	Transit	Egress	24	18	15	
I.	Shadow	Egress	24	19	32	

W.—Visible at Washington.

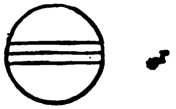
WASHINGTON MEAN TIME.

MARCH.

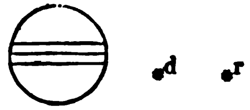
			d	h	m	s
II.	Eclipse	Reapp.	24	20	6	12.7
III.	Shadow	Egress	24	21	1	
I.	Occult.	Disapp.	25	13	15	
I.	Eclipse	Reapp.	25	16	44	57.1
II.	Transit	Ingress W.	26	9	38	
I.	Transit	Ingress W.	26	10	29	
I.	Shadow	Ingress W.	26	11	45	
II.	Shadow	Ingress	26	12	7	
II.	Transit	Egress	26	12	19	
I.	Transit	Egress	26	12	45	
I.	Shadow	Egress	26	14	1	
II.	Shadow	Egress	26	14	50	
I.	Occult.	Disapp. W.	27	7	44	
I.	Eclipse	Reapp. W.	27	11	13	57.6
III.	Occult.	Disapp.	28	3	7	
II.	Occult.	Disapp.	28	4	16	
I.	Transit	Ingress	28	4	58	
III.	Occult.	Reapp.	28	5	54	
I.	Shadow	Ingress	28	6	13	
I.	Transit	Egress W.	28	7	14	
III.	Eclipse	Disapp. W.	28	8	15	39.8
I.	Shadow	Egress W.	28	8	29	
II.	Eclipse	Reapp. W.	28	9	23	56.7
III.	Eclipse	Reapp. W.	28	10	57	13.6
I.	Occult.	Disapp.	29	2	14	
I.	Eclipse	Reapp.	29	5	42	49.8
II.	Transit	Ingress	29	22	59	
I.	Transit	Ingress	29	23	27	
I.	Shadow	Ingress	30	0	42	
II.	Shadow	Ingress	30	1	26	
II.	Transit	Egress	30	1	41	
I.	Transit	Egress	30	1	43	
I.	Shadow	Egress	30	2	58	
II.	Shadow	Egress	30	4	10	
I.	Occult.	Disapp.	30	20	43	
I.	Eclipse	Reapp.	31	0	11	49.8
III.	Transit	Ingress	31	17	13	
II.	Occult.	Disapp.	31	17	36	
I.	Transit	Ingress	31	17	57	
I.	Shadow	Ingress	31	19	11	
III.	Transit	Egress	31	20	1	
I.	Transit	Egress	31	20	13	
I.	Shadow	Egress	31	21	27	
III.	Shadow	Ingress	31	22	11	
II.	Eclipse	Reapp.	31	22	41	41.3

Phases of the Eclipses of the Satellites for an Inverting Telescope.

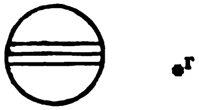
I.



III.



II.



IV. Not Eclipsed.

APRIL.

			d	h	m	s
III.	Shadow	Egress	1	1	3	
I.	Occult.	Disapp.	1	15	13	
I.	Eclipse	Reapp.	1	18	40	43.7
II.	Transit	Ingress	2	12	21	
I.	Transit	Ingress	2	12	26	
I.	Shadow	Ingress	2	13	39	
I.	Transit	Egress	2	14	42	
II.	Shadow	Ingress	2	14	45	
II.	Transit	Egress	2	15	3	
I.	Shadow	Egress	2	15	55	
II.	Shadow	Egress	2	17	29	
I.	Occult.	Disapp. W.	3	9	43	
I.	Eclipse	Reapp.	3	13	9	43.7
I.	Transit	Ingress W.	4	6	56	
II.	Occult.	Disapp. W.	4	6	56	
III.	Occult.	Disapp. W.	4	7	19	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

APRIL.

			d	h	m	s				d	h	m	s
I.	Shadow	Ingress W.	4	8	8		III.	Eclipse	Disapp.	11	16	16	49.4
I.	Transit	Egress W.	4	9	12		III.	Eclipse	Reapp.	11	19	0	36.8
III.	Occult.	Reapp. W.	4	10	8		I.	Occult.	Disapp.	12	6	12	
I.	Shadow	Egress W.	4	10	24		I.	Eclipse	Reapp. W.	12	9	34	17.5
II.	Eclipse	Reapp.	4	11	59	24.4	I.	Transit	Ingress	13	3	25	
III.	Eclipse	Disapp.	4	12	16	2.1	II.	Transit	Ingress	13	4	29	
III.	Eclipse	Reapp.	4	14	58	42.9	I.	Shadow	Ingress	13	4	32	
I.	Occult.	Disapp.	5	4	12		I.	Transit	Egress	13	5	41	
I.	Eclipse	Reapp. W.	5	7	38	35.2	II.	Shadow	Ingress	13	6	42	
I.	Transit	Ingress	6	1	25		I.	Shadow	Egress	13	6	48	
II.	Transit	Ingress	6	1	43		II.	Transit	Egress W.	13	7	11	
I.	Shadow	Ingress	6	2	37		II.	Shadow	Egress W.	13	9	26	
I.	Transit	Egress	6	3	41		I.	Occult.	Disapp.	14	0	42	
II.	Shadow	Ingress	6	4	4		I.	Eclipse	Reapp.	14	4	3	15.5
II.	Transit	Egress	6	4	25		I.	Transit	Ingress	14	21	54	
I.	Shadow	Egress	6	4	53		II.	Occult.	Disapp.	14	23	0	
II.	Shadow	Egress	6	6	48		I.	Shadow	Ingress	14	23	1	
I.	Occult.	Disapp.	6	22	42		I.	Transit	Egress	15	0	10	
I.	Eclipse	Reapp.	7	2	7	34.3	I.	Shadow	Egress	15	1	17	
I.	Transit	Ingress	7	19	55		III.	Transit	Ingress	15	1	43	
II.	Occult.	Disapp.	7	20	17		II.	Eclipse	Reapp.	15	3	52	36.3
I.	Shadow	Ingress	7	21	6		III.	Transit	Egress	15	4	33	
III.	Transit	Ingress	7	21	26		III.	Shadow	Ingress	15	6	11	
I.	Transit	Egress	7	22	11		III.	Shadow	Egress W.	15	9	5	
I.	Shadow	Egress	7	23	22		I.	Occult.	Disapp.	15	19	12	
III.	Transit	Egress	8	0	16		I.	Eclipse	Reapp.	15	22	32	9.7
II.	Eclipse	Reapp.	8	1	17	9.0	I.	Transit	Ingress	16	16	24	
III.	Shadow	Ingress	8	2	11		I.	Shadow	Ingress	16	17	30	
III.	Shadow	Egress	8	5	4		II.	Transit	Ingress	16	17	52	
I.	Occult.	Disapp.	8	17	12		I.	Transit	Egress	16	18	40	
I.	Eclipse	Reapp.	8	20	36	27.6	I.	Shadow	Egress	16	19	46	
I.	Transit	Ingress	9	14	25		II.	Shadow	Ingress	16	20	1	
II.	Transit	Ingress	9	15	6		II.	Transit	Egress	16	20	34	
I.	Shadow	Ingress	9	15	35		II.	Shadow	Egress	16	22	46	
I.	Transit	Egress	9	16	41		I.	Occult.	Disapp.	17	13	42	
II.	Shadow	Ingress	9	17	23		I.	Eclipse	Reapp.	17	17	1	5.9
II.	Transit	Egress	9	17	48		I.	Transit	Ingress	18	10	54	
I.	Shadow	Egress	9	17	51		I.	Shadow	Ingress	18	11	58	
II.	Shadow	Egress	9	20	7		II.	Occult.	Disapp.	18	12	22	
I.	Occult.	Disapp.	10	11	42		I.	Transit	Egress	18	13	10	
I.	Eclipse	Reapp.	10	15	5	26.7	I.	Shadow	Egress	18	14	15	
I.	Transit	Ingress W.	11	8	55		III.	Occult.	Disapp.	18	15	53	
II.	Occult.	Disapp. W.	11	9	38		II.	Eclipse	Reapp.	18	17	10	18.9
I.	Shadow	Ingress W.	11	10	4		III.	Occult.	Reapp.	18	18	44	
I.	Transit	Egress	11	11	11		III.	Eclipse	Disapp.	18	20	17	23.9
III.	Occult.	Disapp.	11	11	35		III.	Eclipse	Reapp.	18	23	2	17.5
I.	Shadow	Egress	11	12	20		I.	Occult.	Disapp. W.	19	8	12	
III.	Occult.	Reapp.	11	14	24		I.	Eclipse	Reapp.	19	11	29	55.7
II.	Eclipse	Reapp.	11	14	34	51.7	I.	Transit	Ingress	20	5	24	

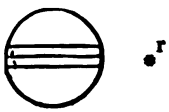
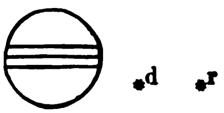
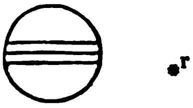
W.—Visible at Washington.

WASHINGTON MEAN TIME.

APRIL.

			d	h	m	s
I.	Shadow	Ingress	20	6	27	
II.	Transit	Ingress	20	7	16	
I.	Transit	Egress W.	20	7	40	
I.	Shadow	Egress W.	20	8	44	
II.	Shadow	Ingress W.	20	9	20	
II.	Transit	Egress W.	20	9	58	
II.	Shadow	Egress	20	12	5	
I.	Occult.	Disapp.	21	2	42	
I.	Eclipse	Reapp.	21	5	58	52.3
I.	Transit	Ingress	21	23	54	
I.	Shadow	Ingress	22	0	56	
II.	Occult.	Disapp.	22	1	44	
I.	Transit	Egress	22	2	10	
I.	Shadow	Egress	22	3	13	
III.	Transit	Ingress	22	6	1	
II.	Eclipse	Reapp.	22	6	28	3.8
III.	Transit	Egress W.	22	8	52	
III.	Shadow	Ingress W.	22	10	11	
III.	Shadow	Egress	22	13	6	
I.	Occult.	Disapp.	22	21	12	
IV.	Shadow	Ingress	22	21	34	
IV.	Shadow	Egress	22	22	0	
I.	Eclipse	Reapp.	23	0	27	43.5
I.	Transit	Ingress	23	18	24	
I.	Shadow	Ingress	23	19	25	
II.	Transit	Ingress	23	20	39	
I.	Transit	Egress	23	20	40	
I.	Shadow	Egress	23	21	42	
II.	Shadow	Ingress	23	22	39	
II.	Transit	Egress	23	23	22	
II.	Shadow	Egress	24	1	24	
I.	Occult.	Disapp.	24	15	42	
I.	Eclipse	Reapp.	24	18	56	40.4
I.	Transit	Ingress	25	12	54	
I.	Shadow	Ingress	25	13	53	
II.	Occult.	Disapp.	25	15	6	
I.	Transit	Egress	25	15	10	
I.	Shadow	Egress	25	16	10	
II.	Eclipse	Reapp.	25	19	45	46.8
III.	Occult.	Disapp.	25	20	14	
III.	Occult.	Reapp.	25	23	6	
III.	Eclipse	Disapp.	26	0	18	25.9
III.	Eclipse	Reapp.	26	3	3	25.3
I.	Occult.	Disapp.	26	10	12	
I.	Eclipse	Reapp.	26	13	25	29.0
I.	Transit	Ingress	27	7	24	
I.	Shadow	Ingress W.	27	8	22	
I.	Transit	Egress W.	27	9	40	
II.	Transit	Ingress	27	10	3	
I.	Shadow	Egress	27	10	39	
II.	Shadow	Ingress	27	11	58	
II.	Transit	Egress	27	12	46	
II.	Shadow	Egress	27	14	43	
I.	Occult.	Disapp.	28	4	42	
I.	Eclipse	Reapp. W.	28	7	54	24.5
I.	Transit	Ingress	29	1	54	
I.	Shadow	Ingress	29	2	51	
I.	Transit	Egress	29	4	10	
II.	Occult.	Disapp.	29	4	29	
I.	Shadow	Egress	29	5	8	
II.	Eclipse	Reapp. W.	29	9	3	32.0
III.	Transit	Ingress	29	10	21	
III.	Transit	Egress	29	13	14	
III.	Shadow	Ingress	29	14	10	
III.	Shadow	Egress	29	17	7	
I.	Occult.	Disapp.	29	23	12	
I.	Eclipse	Reapp.	30	2	23	14.5
I.	Transit	Ingress	30	20	24	
I.	Shadow	Ingress	30	21	19	
I.	Transit	Egress	30	22	40	
II.	Transit	Ingress	30	23	27	
I.	Shadow	Egress	30	23	36	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.		III.	
II.		IV.	Not Eclipsed.

W.—Visible at Washington.

WASHINGTON MEAN TIME.

MAY.

			d	h	m	s
II.	Shadow	Ingress	1	1	17	
II.	Transit	Egress	1	2	10	
II.	Shadow	Egress	1	4	2	
IV.	Eclipse	Disapp.	1	6	45	18.6
IV.	Eclipse	Reapp.	1	7	20	7.8
I.	Occult.	Disapp.	1	17	42	
I.	Eclipse	Reapp.	1	20	52	10.1
I.	Transit	Ingress	2	14	54	
I.	Shadow	Ingress	2	15	48	
I.	Transit	Egress	2	17	10	
II.	Occult.	Disapp.	2	17	52	
I.	Shadow	Egress	2	18	5	
II.	Eclipse	Reapp.	2	22	21	15.8
III.	Occult.	Disapp.	3	0	35	
III.	Occult.	Reapp.	3	3	29	
III.	Eclipse	Disapp.	3	4	18	44.8
III.	Eclipse	Reapp.	3	7	5	49.4
I.	Occult.	Disapp.	3	12	13	
I.	Eclipse	Disapp.	3	15	20	57.6
I.	Transit	Ingress W.	4	9	24	
I.	Shadow	Ingress	4	10	17	
I.	Transit	Egress	4	11	40	
I.	Shadow	Egress	4	12	34	
II.	Transit	Ingress	4	12	51	
II.	Shadow	Ingress	4	14	36	
II.	Transit	Egress	4	15	34	
II.	Shadow	Egress	4	17	21	
I.	Occult.	Disapp.	5	6	43	
I.	Eclipse	Reapp.	5	9	49	51.5
I.	Transit	Ingress	6	3	54	
I.	Shadow	Ingress	6	4	45	
I.	Transit	Egress	6	6	10	
I.	Shadow	Egress	6	7	2	
II.	Occult.	Disapp.	6	7	15	
II.	Eclipse	Reapp.	6	11	39	1.3
III.	Transit	Ingress	6	14	44	
III.	Transit	Egress	6	17	38	
III.	Shadow	Ingress	6	18	10	
III.	Shadow	Egress	6	21	8	
I.	Occult.	Disapp.	7	1	13	
I.	Eclipse	Reapp.	7	4	18	40.2
I.	Transit	Ingress	7	22	25	
I.	Shadow	Ingress	7	23	14	
I.	Transit	Egress	8	0	41	
I.	Shadow	Egress	8	1	31	
II.	Transit	Ingress	8	2	15	
II.	Shadow	Ingress	8	3	54	
II.	Transit	Egress	8	4	59	
II.	Shadow	Egress	8	6	40	
I.	Occult.	Disapp.	8	19	44	
I.	Eclipse	Reapp.	8	22	47	34.4
IV.	Transit	Ingress	9	7	41	
IV.	Transit	Egress W.	9	8	25	
IV.	Shadow	Ingress	9	15	15	
IV.	Shadow	Egress	9	16	32	
I.	Transit	Ingress	9	16	55	
I.	Shadow	Ingress	9	17	43	
I.	Transit	Egress	9	19	11	
I.	Shadow	Egress	9	20	0	
II.	Occult.	Disapp.	9	20	38	
II.	Eclipse	Reapp.	10	0	56	46.3
III.	Occult.	Disapp.	10	4	59	
III.	Occult.	Reapp. W.	10	7	54	
III.	Eclipse	Disapp. W.	10	8	18	53.9
III.	Eclipse	Reapp.	10	11	7	3.3
I.	Occult.	Disapp.	10	14	14	
I.	Eclipse	Reapp.	10	17	16	20.6
I.	Transit	Ingress	11	11	25	
I.	Shadow	Ingress	11	12	11	
I.	Transit	Egress	11	13	41	
I.	Shadow	Egress	11	14	28	
II.	Transit	Ingress	11	15	40	
II.	Shadow	Ingress	11	17	13	
II.	Transit	Egress	11	18	24	
II.	Shadow	Egress	11	19	59	
I.	Occult.	Disapp. W.	12	8	44	
I.	Eclipse	Reapp.	12	11	45	12.9
I.	Transit	Ingress	13	5	55	
I.	Shadow	Ingress	13	6	40	
I.	Transit	Egress W.	13	8	11	
I.	Shadow	Egress W.	13	8	57	
II.	Occult.	Disapp.	13	10	1	
II.	Eclipse	Reapp.	13	14	14	32.2
III.	Transit	Ingress	13	19	8	
III.	Transit	Egress	13	22	3	
III.	Shadow	Ingress	13	22	10	
III.	Shadow	Egress	14	1	9	
I.	Occult.	Disapp.	14	3	14	
I.	Eclipse	Reapp.	14	6	14	0.1
I.	Transit	Ingress	15	0	25	
I.	Shadow	Ingress	15	1	9	
I.	Transit	Egress	15	2	41	
I.	Shadow	Egress	15	3	26	
II.	Transit	Ingress	15	5	5	
II.	Shadow	Ingress	15	6	31	
II.	Transit	Egress	15	7	49	
II.	Shadow	Egress	15	9	18	
I.	Occult.	Disapp.	15	21	45	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

MAY.

			d	h	m	s				d	h	m	s
I.	Eclipse	Reapp.	16	0	42	52.7	I.	Transit	Egress	23	23	13	
I.	Transit	Ingress	16	18	56		I.	Shadow	Egress	23	23	50	
I.	Shadow	Ingress	16	19	37		II.	Occult.	Disapp.	24	2	13	
I.	Transit	Egress	16	21	12		II.	Eclipse	Reapp.	24	6	7	54.2
I.	Shadow	Egress	16	21	54		III.	Occult.	Disapp.	24	13	50	
II.	Occult.	Disapp.	16	23	25		I.	Occult.	Disapp.	24	18	16	
II.	Eclipse	Reapp.	17	3	32	18.6	III.	Eclipse	Reapp.	24	19	8	45.9
III.	Occult.	Disapp.	17	9	24		I.	Eclipse	Reapp.	24	21	6	48.5
III.	Eclipse	Reapp.	17	15	7	55.9	I.	Transit	Ingress	25	15	27	
I.	Occult.	Disapp.	17	16	15		I.	Shadow	Ingress	25	16	2	
IV.	Occult.	Disapp.	17	17	58		I.	Transit	Egress	25	17	44	
IV.	Occult.	Reapp.	17	19	0		I.	Shadow	Egress	25	18	19	
I.	Eclipse	Reapp.	17	19	11	36.7	II.	Transit	Ingress	25	21	19	
IV.	Eclipse	Disapp.	18	0	39	31.0	II.	Shadow	Ingress	25	22	27	
IV.	Eclipse	Reapp.	18	1	45	42.8	II.	Transit	Egress	26	0	4	
I.	Transit	Ingress	18	13	26		II.	Shadow	Egress	26	1	14	
I.	Shadow	Ingress	18	14	6		IV.	Transit	Ingress	26	3	52	
I.	Transit	Egress	18	15	42		IV.	Transit	Egress	26	5	14	
I.	Shadow	Egress	18	16	23		IV.	Shadow	Ingress	26	9	16	
II.	Transit	Ingress	18	18	29		IV.	Shadow	Egress	26	10	49	
II.	Shadow	Ingress	18	19	50		I.	Occult.	Disapp.	26	12	47	
II.	Transit	Egress	18	21	14		I.	Eclipse	Reapp.	26	15	35	37.6
II.	Shadow	Egress	18	22	37		I.	Transit	Ingress	27	9	57	
I.	Occult.	Disapp.	19	10	45		I.	Shadow	Ingress	27	10	30	
I.	Eclipse	Reapp.	19	13	40	28.2	I.	Transit	Egress	27	12	14	
I.	Transit	Ingress	20	7	56		I.	Shadow	Egress	27	12	47	
I.	Shadow	Ingress W.	20	8	35		II.	Occult.	Disapp.	27	15	37	
I.	Transit	Egress	20	10	12		II.	Eclipse	Reapp.	27	19	25	40.9
I.	Shadow	Egress	20	10	52		III.	Transit	Ingress	28	4	1	
II.	Occult.	Disapp.	20	12	49		III.	Shadow	Ingress	28	6	10	
II.	Eclipse	Reapp.	20	16	50	5.4	III.	Transit	Egress	28	6	58	
III.	Transit	Ingress	20	23	34		I.	Occult.	Disapp.	28	7	17	
III.	Shadow	Ingress	21	2	10		III.	Shadow	Egress	28	9	11	
III.	Transit	Egress	21	2	30		I.	Eclipse	Reapp.	28	10	4	22.0
III.	Shadow	Egress	21	5	10		I.	Transit	Ingress	29	4	27	
I.	Occult.	Disapp.	21	5	16		I.	Shadow	Ingress	29	4	59	
I.	Eclipse	Reapp. W.	21	8	9	14.1	I.	Transit	Egress	29	6	44	
I.	Transit	Ingress	22	2	26		I.	Shadow	Egress	29	7	16	
I.	Shadow	Ingress	22	3	4		II.	Transit	Ingress	29	10	44	
I.	Transit	Egress	22	4	43		II.	Shadow	Ingress	29	11	45	
I.	Shadow	Egress	22	5	21		II.	Transit	Egress	29	13	30	
II.	Transit	Ingress	22	7	54		II.	Shadow	Egress	29	14	33	
II.	Shadow	Ingress	22	9	8		I.	Occult.	Disapp.	30	1	48	
II.	Transit	Egress	22	10	39		I.	Eclipse	Reapp.	30	4	33	11.4
II.	Shadow	Egress	22	11	55		I.	Transit	Ingress	30	22	57	
I.	Occult.	Disapp.	22	23	46		I.	Shadow	Ingress	30	23	27	
I.	Eclipse	Reapp.	23	2	38	5.1	I.	Transit	Egress	31	1	14	
I.	Transit	Ingress	23	20	56		I.	Shadow	Egress	31	1	44	
I.	Shadow	Ingress	23	21	33		II.	Occult.	Disapp.	31	5	1	

W.—Visible at Washington.

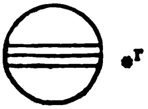
WASHINGTON MEAN TIME.

MAY.

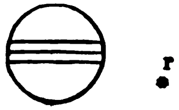
			d	h	m	s				d	h	m	s
II.	Eclipse	Reapp.	31	8	43	32.4	I.	Eclipse	Reapp.	31	23	1	53.3
III.	Occult.	Disapp.	31	18	18		III.	Eclipse	Reapp.	31	23	9	58.6
I.	Occult.	Disapp.	31	20	18								

Phases of the Eclipses of the Satellites for an Inverting Telescope.

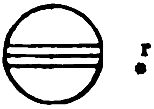
I.



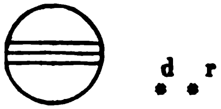
III.



II.



IV.



The Satellites are not visible from June 1st to July 31st, Jupiter being too near the Sun.

AUGUST.

			d	h	m	s				d	h	m	s
I.	Shadow	Egress	1	0	26		II.	Transit	Ingress	5	1	37	
I.	Transit	Egress	1	0	58		II.	Shadow	Egress	5	3	16	
IV.	Shadow	Ingress	1	9	1		II.	Transit	Egress	5	4	28	
II.	Shadow	Ingress	1	11	8		I.	Eclipse	Disapp.	5	8	27	39.8
IV.	Shadow	Egress	1	11	41		I.	Occult.	Reapp.	5	11	19	
II.	Transit	Ingress	1	12	13		I.	Shadow	Ingress	6	5	34	
II.	Shadow	Egress	1	13	58		I.	Transit	Ingress	6	6	10	
IV.	Transit	Ingress	1	14	1		I.	Shadow	Egress	6	7	52	
II.	Transit	Egress	1	15	4		I.	Transit	Egress	6	8	28	
IV.	Transit	Egress	1	16	57		II.	Eclipse	Disapp.	6	18	39	11.3
I.	Eclipse	Disapp.	1	19	30	43.8	II.	Occult.	Reapp.	6	22	43	
I.	Occult.	Reapp.	1	22	19		I.	Eclipse	Disapp.	7	2	56	6.1
I.	Shadow	Ingress	2	16	37		I.	Occult.	Reapp.	7	5	49	
I.	Transit	Ingress	2	17	10		III.	Shadow	Ingress	7	22	1	
I.	Shadow	Egress	2	18	55		I.	Shadow	Ingress	8	0	2	
I.	Transit	Egress	2	19	28		III.	Transit	Ingress	8	0	34	
II.	Eclipse	Disapp.	3	5	21	35.6	I.	Transit	Ingress	8	0	40	
II.	Occult.	Reapp.	3	9	18		III.	Shadow	Egress	8	1	12	
I.	Eclipse	Disapp.	3	13	59	10.6	I.	Shadow	Egress	8	2	20	
I.	Occult.	Reapp.	3	16	49		I.	Transit	Egress	8	2	58	
III.	Eclipse	Disapp.	4	8	13	21.2	III.	Transit	Egress	8	3	48	
I.	Shadow	Ingress	4	11	5		II.	Shadow	Ingress	8	13	43	
I.	Transit	Ingress	4	11	40		II.	Transit	Ingress	8	15	0	
I.	Shadow	Egress	4	13	25		II.	Shadow	Egress	8	16	33	
III.	Occult.	Reapp.	4	13	41		II.	Transit	Egress	8	17	52	
I.	Transit	Egress	4	13	58		I.	Eclipse	Disapp.	8	21	24	36.5
II.	Shadow	Ingress	5	0	26		I.	Occult.	Reapp.	9	0	19	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

AUGUST.

			d	h	m	s				d	h	m	s
I.	Shadow	Ingress	9	18	31		I.	Transit	Egress	16	23	29	
IV.	Eclipse	Disapp.	9	18	31	56.7	II.	Eclipse	Disapp.	17	10	33	27.3
I.	Transit	Ingress	9	19	10		II.	Occult.	Reapp.	17	14	57	
I.	Shadow	Egress	9	20	49		I.	Eclipse	Disapp.	17	17	46	46.8
IV.	Eclipse	Reapp.	9	21	9	7.3	I.	Occult.	Reapp.	17	20	49	
I.	Transit	Egress	9	21	28		IV.	Shadow	Ingress	18	2	58	
IV.	Occult.	Disapp.	10	0	41		IV.	Shadow	Egress	18	5	50	
IV.	Occult.	Reapp.	10	3	46		IV.	Transit	Ingress	18	10	18	
II.	Eclipse	Disapp.	10	7	57	29.0	IV.	Transit	Egress	18	13	31	
II.	Occult.	Reapp.	10	12	7		I.	Shadow	Ingress	18	14	53	
I.	Eclipse	Disapp. W.	10	15	53	1.8	I.	Transit	Ingress W.	18	15	41	
I.	Occult.	Reapp.	10	18	49		III.	Eclipse	Disapp. W.	18	16	10	30.3
III.	Eclipse	Disapp.	11	12	12	1.9	I.	Shadow	Egress	18	17	11	
I.	Shadow	Ingress	11	12	59		I.	Transit	Egress	18	17	59	
I.	Transit	Ingress	11	13	40		III.	Eclipse	Reapp.	18	19	12	50.5
I.	Shadow	Egress	11	15	17		III.	Occult.	Disapp.	18	19	16	
I.	Transit	Egress W.	11	15	58		III.	Occult.	Reapp.	18	22	32	
III.	Occult.	Reapp.	11	18	7		II.	Shadow	Ingress	19	5	35	
II.	Shadow	Ingress	12	3	0		II.	Transit	Ingress	19	7	11	
II.	Transit	Ingress	12	4	24		II.	Shadow	Egress	19	8	25	
II.	Shadow	Egress	12	5	50		II.	Transit	Egress	19	10	3	
II.	Transit	Egress	12	7	16		I.	Eclipse	Disapp.	19	12	15	12.3
I.	Eclipse	Disapp.	12	10	21	29.3	I.	Occult.	Reapp. W.	19	15	19	
I.	Occult.	Reapp.	12	13	19		I.	Shadow	Ingress	20	9	22	
I.	Shadow	Ingress	13	7	28		I.	Transit	Ingress	20	10	11	
I.	Transit	Ingress	13	8	10		I.	Shadow	Egress	20	11	40	
I.	Shadow	Egress	13	9	46		I.	Transit	Egress	20	12	29	
I.	Transit	Egress	13	10	28		II.	Eclipse	Disapp.	20	23	51	3.8
II.	Eclipse	Disapp.	13	21	15	5.3	II.	Occult.	Reapp.	21	4	21	
II.	Occult.	Reapp.	14	1	32		I.	Eclipse	Disapp.	21	6	43	35.6
I.	Eclipse	Disapp.	14	4	49	54.0	I.	Occult.	Reapp.	21	9	49	
I.	Occult.	Reapp.	14	7	49		I.	Shadow	Ingress	22	3	50	
I.	Shadow	Ingress	15	1	56		I.	Transit	Ingress	22	4	41	
III.	Shadow	Ingress	15	2	1		III.	Shadow	Ingress	22	6	0	
I.	Transit	Ingress	15	2	40		I.	Shadow	Egress	22	6	8	
I.	Shadow	Egress	15	4	14		I.	Transit	Egress	22	6	59	
III.	Transit	Ingress	15	4	58		III.	Shadow	Egress	22	9	12	
I.	Transit	Egress	15	4	58		III.	Transit	Ingress	22	9	21	
III.	Shadow	Egress	15	5	12		III.	Transit	Egress	22	12	38	
III.	Transit	Egress	15	8	14		II.	Shadow	Ingress	22	18	52	
II.	Shadow	Ingress W.	15	16	18		II.	Transit	Ingress	22	20	34	
II.	Transit	Ingress	15	17	48		II.	Shadow	Egress	22	21	43	
II.	Shadow	Egress	15	19	8		II.	Transit	Egress	22	23	27	
II.	Transit	Egress	15	20	40		I.	Eclipse	Disapp.	23	1	12	2.5
I.	Eclipse	Disapp.	15	23	18	22.6	I.	Occult.	Reapp.	23	4	19	
I.	Occult.	Reapp.	16	2	19		I.	Shadow	Ingress	23	22	19	
I.	Shadow	Ingress	16	20	25		I.	Transit	Ingress	23	23	10	
I.	Transit	Ingress	16	21	11		I.	Shadow	Egress	24	0	37	
I.	Shadow	Egress	16	22	43		I.	Transit	Egress	24	1	29	

W.—Visible at Washington.

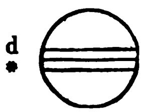
WASHINGTON MEAN TIME.

AUGUST.

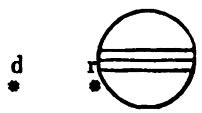
			d	h	m	s				d	h	m	s
II.	Eclipse	Disapp.	24	13	9	29.8	II.	Eclipse	Disapp.	28	2	27	6.2
II.	Occult.	Reapp.	24	17	45		II.	Occult.	Reapp.	28	7	9	
I.	Eclipse	Disapp.	24	19	40	25.3	I.	Eclipse	Disapp.	28	8	37	11.2
I.	Occult.	Reapp.	24	22	49		I.	Occult.	Reapp.	28	11	48	
I.	Shadow	Ingress	25	16	47		I.	Shadow	Ingress	29	5	44	
I.	Transit	Ingress	25	17	40		I.	Transit	Ingress	29	6	39	
I.	Shadow	Egress	25	19	5		I.	Shadow	Egress	29	8	2	
I.	Transit	Egress	25	19	59		I.	Transit	Egress	29	8	58	
III.	Eclipse	Disapp.	25	20	8	41.5	III.	Shadow	Ingress	29	9	59	
III.	Eclipse	Reapp.	25	23	11	57.7	III.	Shadow	Egress	29	13	12	
III.	Occult.	Disapp.	25	23	37		III.	Transit	Ingress	29	13	43	
III.	Occult.	Reapp.	26	2	55		III.	Transit	Egress	29	17	1	
II.	Shadow	Ingress	26	8	9		II.	Shadow	Ingress	29	21	26	
II.	Transit	Ingress	26	9	57		II.	Transit	Ingress	29	23	20	
II.	Shadow	Egress	26	11	0		II.	Shadow	Egress	30	0	17	
IV.	Eclipse	Disapp.	26	12	32	5.8	II.	Transit	Egress	30	2	13	
II.	Transit	Egress	26	12	50		I.	Eclipse	Disapp.	30	3	5	36.6
I.	Eclipse	Disapp.	26	14	8	49.2	I.	Occult.	Reapp.	30	6	18	
IV.	Eclipse	Reapp. W.	26	15	20	48.8	I.	Shadow	Ingress	31	0	13	
I.	Occult.	Reapp.	26	17	18		I.	Transit	Ingress	31	1	9	
IV.	Occult.	Disapp.	26	20	55		I.	Shadow	Egress	31	2	31	
IV.	Occult.	Reapp.	27	0	15		I.	Transit	Egress	31	3	28	
I.	Shadow	Ingress	27	11	16		II.	Eclipse	Disapp. W.	31	15	45	35.8
I.	Transit	Ingress	27	12	10		II.	Occult.	Reapp.	31	20	33	
I.	Shadow	Egress	27	13	34		I.	Eclipse	Disapp.	31	21	33	58.2
I.	Transit	Egress	27	14	29								

Phases of the Eclipses of the Satellites for an Inverting Telescope.

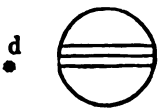
I.



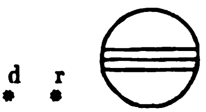
III.



II.



IV.



SEPTEMBER.

			d	h	m	s				d	h	m	s
I.	Occult.	Reapp.	1	0	48		III.	Eclipse	Reapp.	2	3	11	4.0
I.	Shadow	Ingress	1	18	41		III.	Occult.	Disapp.	2	3	57	
I.	Transit	Ingress	1	19	39		III.	Occult.	Reapp.	2	7	16	
I.	Shadow	Egress	1	20	59		II.	Shadow	Ingress	2	10	43	
I.	Transit	Egress	1	21	58		II.	Transit	Ingress	2	12	42	
III.	Eclipse	Disapp.	2	0	6	52.4	II.	Shadow	Egress	2	13	34	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

SEPTEMBER.

			d	h	m	s				d	h	m	s
II.	Transit	Egress W.	2	15	35		II.	Transit	Egress	9	18	19	
I.	Eclipse	Disapp. W.	2	16	2	20.7	I.	Occult.	Reapp.	9	21	15	
I.	Occult.	Reapp.	2	19	19		I.	Shadow	Ingress W.	10	15	4	
I.	Shadow	Ingress	3	13	10		I.	Transit	Ingress W.	10	16	7	
I.	Transit	Ingress	3	14	9		I.	Shadow	Egress	10	17	22	
I.	Shadow	Egress W.	3	15	28		I.	Transit	Egress	10	18	26	
I.	Transit	Egress W.	3	16	28		II.	Eclipse	Disapp.	11	7	39	22.4
IV.	Shadow	Ingress	3	20	56		I.	Eclipse	Disapp.	11	12	24	5.8
IV.	Shadow	Egress	3	23	58		II.	Occult.	Reapp.	11	12	42	
II.	Eclipse	Disapp.	4	5	3	12.4	I.	Occult.	Reapp. W.	11	15	45	
IV.	Transit	Ingress	4	6	17		IV.	Eclipse	Disapp.	12	6	31	33.7
IV.	Transit	Egress	4	9	44		IV.	Eclipse	Reapp.	12	9	30	53.3
II.	Occult.	Reapp.	4	9	56		I.	Shadow	Ingress	12	9	32	
I.	Eclipse	Disapp.	4	10	30	41.1	I.	Transit	Ingress	12	10	36	
I.	Occult.	Reapp.	4	13	47		I.	Shadow	Egress	12	11	50	
I.	Shadow	Ingress	5	7	38		I.	Transit	Egress	12	12	55	
I.	Transit	Ingress	5	8	38		IV.	Occult.	Disapp. W.	12	16	44	
I.	Shadow	Egress	5	9	56		III.	Shadow	Ingress	12	17	56	
I.	Transit	Egress	5	10	57		IV.	Occult.	Reapp.	12	20	18	
III.	Shadow	Ingress	5	13	58		III.	Shadow	Egress	12	21	10	
III.	Shadow	Egress	5	17	11		III.	Transit	Ingress	12	22	18	
III.	Transit	Ingress	5	18	2		III.	Transit	Egress	13	1	40	
III.	Transit	Egress	5	21	21		II.	Shadow	Ingress	13	2	34	
II.	Shadow	Ingress	6	0	0		II.	Transit	Ingress	13	4	47	
II.	Transit	Ingress	6	2	4		II.	Shadow	Egress	13	5	25	
II.	Shadow	Egress	6	2	51		I.	Eclipse	Disapp.	13	6	52	28.3
II.	Transit	Egress	6	4	57		II.	Transit	Egress	13	7	41	
I.	Eclipse	Disapp.	6	4	59	5.1	I.	Occult.	Reapp.	13	10	14	
I.	Occult.	Reapp.	6	8	16		I.	Shadow	Ingress	14	4	1	
I.	Shadow	Ingress	7	2	7		I.	Transit	Ingress	14	5	6	
I.	Transit	Ingress	7	3	8		I.	Shadow	Egress	14	6	19	
I.	Shadow	Egress	7	4	25		I.	Transit	Egress	14	7	25	
I.	Transit	Egress	7	5	27		II.	Eclipse	Disapp.	14	20	57	58.2
II.	Eclipse	Disapp.	7	18	21	45.7	I.	Eclipse	Disapp.	15	1	20	47.8
II.	Occult.	Reapp.	7	23	19		II.	Occult.	Reapp.	15	2	5	
I.	Eclipse	Disapp.	7	23	27	25.5	I.	Occult.	Reapp.	15	4	44	
I.	Occult.	Reapp.	8	2	46		I.	Shadow	Ingress	15	22	29	
I.	Shadow	Ingress	8	20	35		I.	Transit	Ingress	15	23	35	
I.	Transit	Ingress	8	21	37		I.	Shadow	Egress	16	0	47	
I.	Shadow	Egress	8	22	53		I.	Transit	Egress	16	1	54	
I.	Transit	Egress	8	23	56		III.	Eclipse	Disapp.	16	8	3	49.8
III.	Eclipse	Disapp.	9	4	5	30.0	III.	Eclipse	Reapp.	16	11	9	50.0
III.	Eclipse	Reapp.	9	7	10	36.2	III.	Occult.	Disapp.	16	12	30	
III.	Occult.	Disapp.	9	8	15		II.	Shadow	Ingress W.	16	15	51	
III.	Occult.	Reapp.	9	11	35		III.	Occult.	Reapp. W.	16	15	52	
II.	Shadow	Ingress	9	13	17		II.	Transit	Ingress	16	18	8	
II.	Transit	Ingress W.	9	15	26		II.	Shadow	Egress	16	18	42	
II.	Shadow	Egress W.	9	16	8		I.	Eclipse	Disapp.	16	19	49	7.6
I.	Eclipse	Disapp.	9	17	55	46.7	II.	Transit	Egress	16	21	2	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

SEPTEMBER.

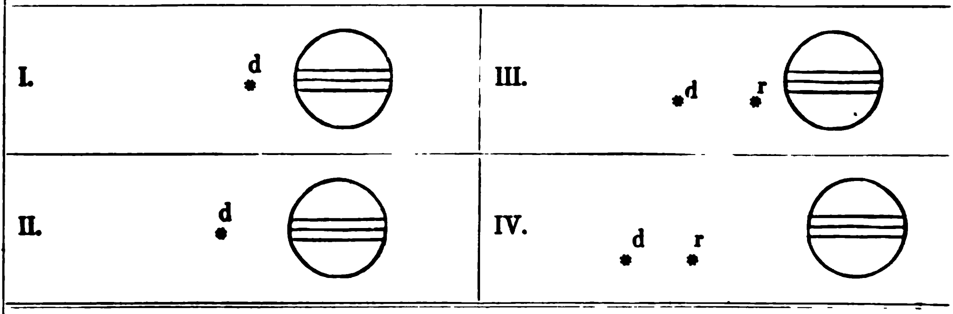
			d	h	m	s				d	h	m	s
I.	Occult.	Reapp.	16	23	13		II.	Transit	Egress	23	23	43	
I.	Shadow	Ingress W.	17	16	57		I.	Occult.	Reapp.	24	1	10	
I.	Transit	Ingress	17	18	5		I.	Shadow	Ingress	24	18	51	
I.	Shadow	Egress	17	19	16		I.	Transit	Ingress	24	20	3	
I.	Transit	Egress	17	20	24		I.	Shadow	Egress	24	21	10	
II.	Eclipse	Disapp.	18	10	15	35.1	I.	Transit	Egress	24	22	22	
I.	Eclipse	Disapp. W.	18	14	17	25.9	II.	Eclipse	Disapp.	25	12	51	50.4
II.	Occult.	Reapp. W.	18	15	27		I.	Eclipse	Disapp. W.	25	16	10	41.4
I.	Occult.	Reapp.	18	17	42		II.	Occult.	Reapp.	25	18	10	
I.	Shadow	Ingress	19	11	26		I.	Occult.	Reapp.	25	19	39	
I.	Transit	Ingress	19	12	34		I.	Shadow	Ingress W.	26	13	20	
I.	Shadow	Egress W.	19	13	45		I.	Transit	Ingress W.	26	14	32	
I.	Transit	Egress W.	19	14	53		I.	Shadow	Egress W.	26	15	39	
III.	Shadow	Ingress	19	21	54		I.	Transit	Egress W.	26	16	51	
III.	Shadow	Egress	20	1	10		III.	Shadow	Ingress	27	1	52	
III.	Transit	Ingress	20	2	32		III.	Shadow	Egress	27	5	9	
II.	Shadow	Ingress	20	5	8		III.	Transit	Ingress	27	6	44	
III.	Transit	Egress	20	5	55		II.	Shadow	Ingress	27	7	42	
II.	Transit	Ingress	20	7	29		III.	Transit	Egress	27	10	7	
II.	Shadow	Egress	20	7	59		II.	Transit	Ingress	27	10	9	
I.	Eclipse	Disapp.	20	8	45	46.9	II.	Shadow	Egress	27	10	33	
II.	Transit	Egress	20	10	23		I.	Eclipse	Disapp.	27	10	39	1.4
I.	Occult.	Reapp.	20	12	12		II.	Transit	Egress W.	27	13	3	
IV.	Shadow	Ingress W.	20	14	53		I.	Occult.	Reapp. W.	27	14	8	
IV.	Shadow	Egress	20	18	6		I.	Shadow	Ingress	28	7	48	
IV.	Transit	Ingress	21	1	48		I.	Transit	Ingress	28	9	1	
IV.	Transit	Egress	21	5	29		I.	Shadow	Egress	28	10	7	
I.	Shadow	Ingress	21	5	54		I.	Transit	Egress	28	11	20	
I.	Transit	Ingress	21	7	4		IV.	Eclipse	Disapp.	29	0	31	0.6
I.	Shadow	Egress	21	8	13		II.	Eclipse	Disapp.	29	2	10	31.3
I.	Transit	Egress	21	9	23		IV.	Eclipse	Reapp.	29	3	40	2.8
II.	Eclipse	Disapp.	21	23	34	13.6	I.	Eclipse	Disapp.	29	5	7	19.5
I.	Eclipse	Disapp.	22	3	14	5.5	II.	Occult.	Reapp.	29	7	32	
II.	Occult.	Reapp.	22	4	49		I.	Occult.	Reapp.	29	8	37	
I.	Occult.	Reapp.	22	6	41		IV.	Occult.	Disapp.	29	12	1	
I.	Shadow	Ingress	23	0	23		IV.	Occult.	Reapp. W.	29	15	47	
I.	Transit	Ingress	23	1	33		I.	Shadow	Ingress	30	2	17	
I.	Shadow	Egress	23	2	42		I.	Transit	Ingress	30	3	31	
I.	Transit	Egress	23	3	52		I.	Shadow	Egress	30	4	36	
III.	Eclipse	Disapp.	23	12	2	34.3	I.	Transit	Egress	30	5	50	
III.	Eclipse	Reapp. W.	23	15	9	27.7	III.	Eclipse	Disapp. W.	30	16	0	36.8
III.	Occult.	Disapp. W.	23	16	44		III.	Eclipse	Reapp.	30	19	8	22.8
II.	Shadow	Ingress	23	18	25		III.	Occult.	Disapp.	30	20	53	
III.	Occult.	Reapp.	23	20	7		II.	Shadow	Ingress	30	20	58	
II.	Transit	Ingress	23	20	49		II.	Transit	Ingress	30	23	28	
II.	Shadow	Egress	23	21	16		I.	Eclipse	Disapp.	30	23	35	37.1
I.	Eclipse	Disapp.	23	21	42	24.1	II.	Shadow	Egress	30	23	50	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

SEPTEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



OCTOBER.

			d	h	m	s
III.	Occult.	Reapp.	1	0	19	
II.	Transit	Egress	1	2	23	
I.	Occult.	Reapp.	1	3	6	
I.	Shadow	Ingress	1	20	45	
I.	Transit	Ingress	1	22	0	
I.	Shadow	Egress	1	23	4	
I.	Transit	Egress	2	0	19	
II.	Eclipse	Disapp. W.	2	15	28	8.3
I.	Eclipse	Disapp.	2	18	3	53.8
II.	Occult.	Reapp.	2	20	53	
I.	Occult.	Reapp.	2	21	35	
I.	Shadow	Ingress W.	3	15	14	
I.	Transit	Ingress W.	3	16	29	
I.	Shadow	Egress W.	3	17	33	
I.	Transit	Egress	3	18	48	
III.	Shadow	Ingress	4	5	51	
III.	Shadow	Egress	4	9	8	
II.	Shadow	Ingress	4	10	15	
III.	Transit	Ingress	4	10	52	
I.	Eclipse	Disapp.	4	12	32	12.7
II.	Transit	Ingress W.	4	12	47	
II.	Shadow	Egress W.	4	13	7	
III.	Transit	Egress W.	4	14	17	
II.	Transit	Egress W.	4	15	42	
I.	Occult.	Reapp. W.	4	16	4	
I.	Shadow	Ingress	5	9	42	
I.	Transit	Ingress	5	10	58	
I.	Shadow	Egress	5	12	1	
I.	Transit	Egress W.	5	13	17	
II.	Eclipse	Disapp.	6	4	46	50.7
I.	Eclipse	Disapp.	6	7	0	30.3
II.	Occult.	Reapp.	6	10	14	
I.	Occult.	Reapp.	6	10	33	
I.	Shadow	Ingress	7	4	10	
I.	Transit	Ingress	7	5	27	
I.	Shadow	Egress	7	6	29	
I.	Transit	Egress	7	7	46	
IV.	Shadow	Ingress	7	8	50	
IV.	Shadow	Egress	7	12	12	
III.	Eclipse	Disapp.	7	19	58	29.4
IV.	Transit	Ingress	7	20	43	
III.	Eclipse	Reapp.	7	23	7	7.2
II.	Shadow	Ingress	7	23	32	
IV.	Transit	Egress	8	0	34	
III.	Occult.	Disapp.	8	1	0	
I.	Eclipse	Disapp.	8	1	28	47.3
II.	Transit	Ingress	8	2	6	
II.	Shadow	Egress	8	2	24	
III.	Occult.	Reapp.	8	4	25	
II.	Transit	Egress	8	5	1	
I.	Occult.	Reapp.	8	5	2	
I.	Shadow	Ingress	8	22	38	
I.	Transit	Ingress	8	23	56	
I.	Shadow	Egress	9	0	57	
I.	Transit	Egress	9	2	15	
II.	Eclipse	Disapp.	9	18	4	27.7
I.	Eclipse	Disapp.	9	19	57	3.4
I.	Occult.	Reapp.	9	23	30	
II.	Occult.	Reapp.	9	23	33	
I.	Shadow	Ingress W.	10	17	7	
I.	Transit	Ingress	10	18	25	
I.	Shadow	Egress	10	19	26	
I.	Transit	Egress	10	20	44	
III.	Shadow	Ingress	11	9	49	
II.	Shadow	Ingress W.	11	12	48	
III.	Shadow	Egress W.	11	13	7	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

OCTOBER.

			d	h	m	s				d	h	m	s
I.	Eclipse	Disapp. W.	11	14	25	21.5	II.	Transit	Ingress W.	18	18	0	
III.	Transit	Ingress W.	11	14	57		II.	Shadow	Egress	18	18	14	
II.	Transit	Ingress W.	11	15	25		III.	Transit	Ingress	18	18	59	
II.	Shadow	Egress W	11	15	40		I.	Occult.	Reapp.	18	19	53	
I.	Occult.	Reapp.	11	17	59		II.	Transit	Egress	18	20	54	
II.	Transit	Egress	11	18	19		III.	Transit	Egress	18	22	26	
III.	Transit	Egress	11	18	23		I.	Shadow	Ingress W.	19	13	29	
I.	Shadow	Ingress	12	11	35		I.	Transit	Ingress W.	19	14	47	
I.	Transit	Ingress W.	12	12	53		I.	Shadow	Egress W.	19	15	48	
I.	Shadow	Egress W.	12	13	54		I.	Transit	Egress W.	19	17	6	
I.	Transit	Egress W.	12	15	12		II.	Eclipse	Disapp.	20	9	59	33.0
II.	Eclipse	Disapp.	13	7	23	11.2	I.	Eclipse	Disapp.	20	10	46	45.8
I.	Eclipse	Disapp.	13	8	53	38.8	I.	Occult.	Reapp. W.	20	14	21	
I.	Occult.	Reapp. W.	13	12	28		II.	Occult.	Reapp. W.	20	15	31	
II.	Occult.	Reapp. W.	13	12	53		I.	Shadow	Ingress	21	7	58	
I.	Shadow	Ingress	14	6	4		I.	Transit	Ingress	21	9	16	
I.	Transit	Ingress	14	7	22		I.	Shadow	Egress	21	10	17	
I.	Shadow	Egress	14	8	23		I.	Transit	Egress	21	11	35	
I.	Transit	Egress	14	9	41		III.	Eclipse	Disapp.	22	3	53	56.2
III.	Eclipse	Disapp.	14	23	56	10.5	II.	Shadow	Ingress	22	4	38	
II.	Shadow	Ingress	15	2	5		I.	Eclipse	Disapp.	22	5	15	1.6
III.	Eclipse	Reapp.	15	3	5	39.5	III.	Eclipse	Reapp.	22	7	4	15.6
I.	Eclipse	Disapp.	15	3	21	55.0	II.	Transit	Ingress	22	7	16	
II.	Transit	Ingress	15	4	43		II.	Shadow	Egress	22	7	31	
II.	Shadow	Egress	15	4	57		I.	Occult.	Reapp.	22	8	49	
III.	Occult.	Disapp.	15	5	2		III.	Occult.	Disapp.	22	9	1	
I.	Occult.	Reapp.	15	6	56		II.	Transit	Egress	22	10	11	
II.	Transit	Egress	15	7	37		III.	Occult.	Reapp. W.	22	12	28	
III.	Occult.	Reapp.	15	8	28		I.	Shadow	Ingress	23	2	26	
IV.	Eclipse	Disapp.	15	18	30	55.1	I.	Transit	Ingress	23	3	45	
IV.	Eclipse	Reapp.	15	21	49	1.5	I.	Shadow	Egress	23	4	45	
I.	Shadow	Ingress	16	0	32		I.	Transit	Egress	23	6	4	
I.	Transit	Ingress	16	1	50		II.	Eclipse	Disapp.	23	23	17	10.3
I.	Shadow	Egress	16	2	51		I.	Eclipse	Disapp.	23	23	43	17.5
I.	Transit	Egress	16	4	9		IV.	Shadow	Ingress	24	2	47	
IV.	Occult.	Disapp.	16	6	38		I.	Occult.	Reapp.	24	3	18	
IV.	Occult.	Reapp.	16	10	34		II.	Occult.	Reapp.	24	4	49	
II.	Eclipse	Disapp.	16	20	40	48.4	IV.	Shadow	Egress	24	6	18	
I.	Eclipse	Disapp.	16	21	50	11.0	IV.	Transit	Ingress W.	24	14	52	
I.	Occult.	Reapp.	17	1	24		IV.	Transit	Egress	24	18	52	
II.	Occult.	Reapp.	17	2	12		I.	Shadow	Ingress	24	20	55	
I.	Shadow	Ingress	17	19	1		I.	Transit	Ingress	24	22	13	
I.	Transit	Ingress	17	20	19		I.	Shadow	Egress	24	23	14	
I.	Shadow	Egress	17	21	20		I.	Transit	Egress	25	0	32	
I.	Transit	Egress	17	22	38		III.	Shadow	Ingress W.	25	17	46	
III.	Shadow	Ingress W.	18	13	48		II.	Shadow	Ingress W.	25	17	55	
II.	Shadow	Ingress W.	18	15	21		I.	Eclipse	Disapp. W.	25	18	11	34.6
I.	Eclipse	Disapp. W.	18	16	18	28.5	II.	Transit	Ingress	25	20	32	
III.	Shadow	Egress W.	18	17	7		II.	Shadow	Egress	25	20	48	

W.—Visible at Washington.

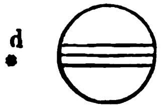
WASHINGTON MEAN TIME.

OCTOBER.

			d	h	m	s				d	h	m	s
III.	Shadow	Egress	25	21	6		II.	Shadow	Ingress	29	7	11	
I.	Occult.	Reapp.	25	21	46		III.	Eclipse	Disapp.	29	7	52	13.1
III.	Transit	Ingress	25	22	56		II.	Transit	Ingress	29	9	48	
II.	Transit	Egress	25	23	27		II.	Shadow	Egress	29	10	4	
III.	Transit	Egress	26	2	24		I.	Occult.	Reapp.	29	10	42	
I.	Shadow	Ingress W.	26	15	23		III.	Eclipse	Reapp.	29	11	3	22.3
I.	Transit	Ingress W.	26	16	41		II.	Transit	Egress W.	29	12	43	
I.	Shadow	Egress W.	26	17	42		III.	Occult.	Disapp. W.	29	12	56	
I.	Transit	Egress	26	19	0		III.	Occult.	Reapp. W.	29	16	24	
II.	Eclipse	Disapp. W.	27	12	35	55.4	I.	Shadow	Ingress	30	4	20	
I.	Eclipse	Disapp. W.	27	12	39	52.0	I.	Transit	Ingress	30	5	37	
I.	Occult.	Reapp. W.	27	16	14		I.	Shadow	Egress	30	6	39	
II.	Occult.	Reapp. W.	27	18	7		I.	Transit	Egress	30	7	56	
I.	Shadow	Ingress	28	9	52		I.	Eclipse	Disapp.	31	1	36	23.9
I.	Transit	Ingress W.	28	11	9		II.	Eclipse	Disapp.	31	1	53	33.1
I.	Shadow	Egress W.	28	12	11		I.	Occult.	Reapp.	31	5	10	
I.	Transit	Egress W.	28	13	28		II.	Occult.	Reapp.	31	7	23	
I.	Eclipse	Disapp.	29	7	8	7.8	I.	Shadow	Ingress	31	22	49	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.



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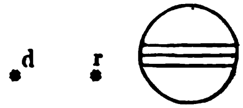
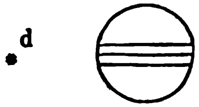
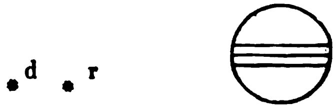


II.



IV.



NOVEMBER.

			d	h	m	s				d	h	m	s
I.	Transit	Ingress	1	0	5		III.	Transit	Ingress	2	2	49	
I.	Shadow	Egress	1	1	8		IV.	Occult.	Reapp.	2	4	27	
I.	Transit	Egress	1	2	24		III.	Transit	Egress	2	6	17	
IV.	Eclipse	Disapp. W.	1	12	30	13.2	I.	Shadow	Ingress W.	2	17	17	
IV.	Eclipse	Reapp. W.	1	15	56	43.2	I.	Transit	Ingress	2	18	33	
I.	Eclipse	Disapp.	1	20	4	40.8	I.	Shadow	Egress	2	19	36	
II.	Shadow	Ingress	1	20	28		I.	Transit	Egress	2	20	52	
III.	Shadow	Ingress	1	21	45		I.	Eclipse	Disapp. W.	3	14	32	58.6
II.	Transit	Ingress	1	23	3		II.	Eclipse	Disapp. W.	3	15	12	18.1
II.	Shadow	Egress	1	23	21		I.	Occult.	Reapp. W.	3	18	5	
I.	Occult.	Reapp.	1	23	38		II.	Occult.	Reapp.	3	20	40	
IV.	Occult.	Disapp.	2	0	25		I.	Shadow	Ingress W.	4	11	46	
III.	Shadow	Egress	2	1	5		I.	Transit	Ingress W.	4	13	1	
II.	Transit	Egress	2	1	58		I.	Shadow	Egress W.	4	14	5	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

NOVEMBER.

			d	h	m	s				d	h	m	s
I.	Transit	Egress W.	4	15	20		I.	Eclipse	Disapp. W.	12	10	54	22.2
I.	Eclipse	Disapp.	5	9	1	14.2	II.	Shadow	Ingress W.	12	12	18	
II.	Shadow	Ingress	5	9	44		I.	Occult.	Reapp. W.	12	14	23	
III.	Eclipse	Disapp. W.	5	11	50	19.5	II.	Transit	Ingress W.	12	14	44	
II.	Transit	Ingress W.	5	12	17		II.	Shadow	Egress W.	12	15	11	
I.	Occult.	Reapp. W.	5	12	33		III.	Eclipse	Disapp. W.	12	15	48	49.9
II.	Shadow	Egress W.	5	12	37		II.	Transit	Egress W.	12	17	39	
III.	Eclipse	Reapp. W.	5	15	2	15.7	III.	Eclipse	Reapp.	12	19	1	36.3
II.	Transit	Egress W.	5	15	12		III.	Occult.	Disapp.	12	20	33	
III.	Occult.	Disapp. W.	5	16	47		III.	Occult.	Reapp.	13	0	2	
III.	Occult.	Reapp.	5	20	15		I.	Shadow	Ingress	13	8	8	
I.	Shadow	Ingress	6	6	14		I.	Transit	Ingress	13	9	20	
I.	Transit	Ingress	6	7	29		I.	Shadow	Egress W.	13	10	27	
I.	Shadow	Egress	6	8	33		I.	Transit	Egress W.	13	11	39	
I.	Transit	Egress	6	9	48		I.	Eclipse	Disapp.	14	5	22	39.3
I.	Eclipse	Disapp.	7	3	29	30.7	II.	Eclipse	Disapp.	14	7	6	20.4
II.	Eclipse	Disapp.	7	4	29	56.7	I.	Occult.	Reapp.	14	8	51	
I.	Occult.	Reapp.	7	7	1		II.	Occult.	Reapp. W.	14	12	25	
II.	Occult.	Reapp.	7	9	55		I.	Shadow	Ingress	15	2	36	
I.	Shadow	Ingress	8	0	43		I.	Transit	Ingress	15	3	48	
I.	Transit	Ingress	8	1	57		I.	Shadow	Egress	15	4	55	
I.	Shadow	Egress	8	3	2		I.	Transit	Egress	15	6	7	
I.	Transit	Egress	8	4	16		I.	Eclipse	Disapp.	15	23	50	56.8
I.	Eclipse	Disapp.	8	21	57	47.8	II.	Shadow	Ingress	16	1	35	
II.	Shadow	Ingress	8	23	1		I.	Occult.	Reapp.	16	3	18	
I.	Occult.	Reapp.	9	1	28		II.	Transit	Ingress	16	3	57	
II.	Transit	Ingress	9	1	31		II.	Shadow	Egress	16	4	28	
III.	Shadow	Ingress	9	1	43		III.	Shadow	Ingress	16	5	41	
II.	Shadow	Egress	9	1	54		II.	Transit	Egress	16	6	52	
II.	Transit	Egress	9	4	26		III.	Shadow	Egress	16	9	3	
III.	Shadow	Egress	9	5	4		III.	Transit	Ingress W.	16	10	21	
III.	Transit	Ingress	9	6	37		III.	Transit	Egress W.	16	13	50	
III.	Transit	Egress	9	10	6		I.	Shadow	Ingress	16	21	5	
I.	Shadow	Ingress	9	19	11		I.	Transit	Ingress	16	22	15	
I.	Transit	Ingress	9	20	24		I.	Shadow	Egress	16	23	24	
IV.	Shadow	Ingress	9	20	45		I.	Transit	Egress	17	0	34	
I.	Shadow	Egress	9	21	30		I.	Eclipse	Disapp. W.	17	18	19	15.8
I.	Transit	Egress	9	22	43		II.	Eclipse	Disapp.	17	20	25	4.9
IV.	Shadow	Egress	10	0	22		I.	Occult.	Reapp.	17	21	45	
IV.	Transit	Ingress	10	8	8		II.	Occult.	Reapp.	18	1	39	
IV.	Transit	Egress W.	10	12	14		IV.	Eclipse	Disapp.	18	6	29	43.4
I.	Eclipse	Disapp. W.	10	16	26	6.1	IV.	Eclipse	Reapp. W.	18	10	4	2.2
II.	Eclipse	Disapp. W.	10	17	48	41.6	I.	Shadow	Ingress W.	18	15	33	
I.	Occult.	Reapp.	10	19	56		I.	Transit	Ingress W.	18	16	42	
II.	Occult.	Reapp.	10	23	11		IV.	Occult.	Disapp. W.	18	17	13	
I.	Shadow	Ingress W.	11	13	40		I.	Shadow	Egress W.	18	17	52	
I.	Transit	Ingress W.	11	14	52		I.	Transit	Egress	18	19	1	
I.	Shadow	Egress W.	11	15	59		IV.	Occult.	Reapp.	18	21	21	
I.	Transit	Egress W.	11	17	11		I.	Eclipse	Disapp. W.	19	12	47	32.6

W.—Visible at Washington.

WASHINGTON MEAN TIME.

NOVEMBER.

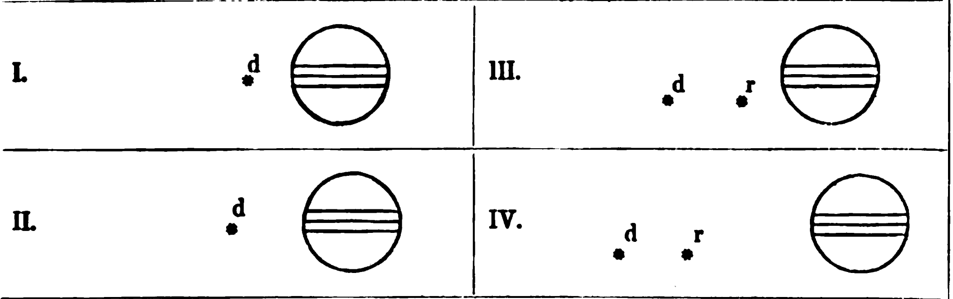
			d	h	m	s
II.	Shadow	Ingress W.	19	14	52	
I.	Occult.	Reapp. W.	19	16	12	
II.	Transit	Ingress W.	19	17	9	
II.	Shadow	Egress W.	19	17	45	
III.	Eclipse	Disapp.	19	19	46	46.4
II.	Transit	Egress	19	20	4	
III.	Eclipse	Reapp.	19	23	0	20.4
III.	Occult.	Disapp.	20	0	14	
III.	Occult.	Reapp.	20	3	44	
I.	Shadow	Ingress W.	20	10	1	
I.	Transit	Ingress W.	20	11	9	
I.	Shadow	Egress W.	20	12	20	
I.	Transit	Egress W.	20	13	28	
I.	Eclipse	Disapp.	21	7	15	50.5
II.	Eclipse	Disapp.	21	9	42	44.1
I.	Occult.	Reapp. W.	21	10	40	
II.	Occult.	Reapp. W.	21	14	52	
I.	Shadow	Ingress	22	4	30	
I.	Transit	Ingress	22	5	36	
I.	Shadow	Egress	22	6	49	
I.	Transit	Egress	22	7	56	
I.	Eclipse	Disapp.	23	1	44	8.5
II.	Shadow	Ingress	23	4	8	
I.	Occult.	Reapp.	23	5	7	
II.	Transit	Ingress	23	6	21	
II.	Shadow	Egress	23	7	2	
II.	Transit	Egress	23	9	16	
III.	Shadow	Ingress W.	23	9	39	
III.	Shadow	Egress W.	23	13	2	
III.	Transit	Ingress W.	23	14	0	
III.	Transit	Egress W.	23	17	30	
I.	Shadow	Ingress	23	22	58	
I.	Transit	Ingress	24	0	3	
I.	Shadow	Egress	24	1	17	
I.	Transit	Egress	24	2	23	
I.	Eclipse	Disapp.	24	20	12	28.8
II.	Eclipse	Disapp.	24	23	1	27.4
I.	Occult.	Reapp.	24	23	34	
II.	Occult.	Reapp.	25	4	5	
I.	Shadow	Ingress W.	25	17	27	
I.	Transit	Ingress W.	25	18	30	
I.	Shadow	Egress	25	19	46	
I.	Transit	Egress	25	20	50	
I.	Eclipse	Disapp. W.	26	14	40	46.5
IV.	Shadow	Ingress W.	26	14	42	
II.	Shadow	Ingress W.	26	17	25	
I.	Occult.	Reapp. W.	26	18	0	
IV.	Shadow	Egress W.	26	18	28	
II.	Transit	Ingress	26	19	32	
II.	Shadow	Egress	26	20	19	
II.	Transit	Egress	26	22	27	
III.	Eclipse	Disapp.	26	23	44	39.0
IV.	Transit	Ingress	27	0	24	
III.	Eclipse	Reapp.	27	2	58	59.8
III.	Occult.	Disapp.	27	3	50	
IV.	Transit	Egress	27	4	34	
III.	Occult.	Reapp.	27	7	20	
I.	Shadow	Ingress W.	27	11	55	
I.	Transit	Ingress W.	27	12	57	
I.	Shadow	Egress W.	27	14	14	
I.	Transit	Egress W.	27	15	17	
I.	Eclipse	Disapp. W.	28	9	9	5.4
II.	Eclipse	Disapp. W.	28	12	19	8.0
I.	Occult.	Reapp. W.	28	12	27	
II.	Occult.	Reapp. W.	28	17	17	
I.	Shadow	Ingress	29	6	24	
I.	Transit	Ingress	29	7	24	
I.	Shadow	Egress	29	8	43	
I.	Transit	Egress W.	29	9	44	
I.	Eclipse	Disapp.	30	3	37	24.6
II.	Shadow	Ingress	30	6	42	
I.	Occult.	Reapp.	30	6	54	
II.	Transit	Ingress	30	8	43	
II.	Shadow	Egress W.	30	9	36	
II.	Transit	Egress W.	30	11	38	
III.	Shadow	Ingress W.	30	13	38	
III.	Shadow	Egress W.	30	17	1	
III.	Transit	Ingress W.	30	17	35	
III.	Transit	Egress	30	21	5	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

NOVEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



DECEMBER.

			d	h	m	s				d	h	m	s
I.	Shadow	Ingress	1	0	52		II.	Occult.	Reapp.	5	19	39	
I.	Transit	Ingress	1	1	51		I.	Shadow	Ingress	6	8	18	
I.	Shadow	Egress	1	3	11		I.	Transit	Ingress W.	6	9	12	
I.	Transit	Egress	1	4	11		I.	Shadow	Egress W.	6	10	37	
I.	Eclipse	Disapp.	1	22	5	46.2	I.	Transit	Egress W.	6	11	32	
I.	Occult.	Reapp.	2	1	21		I.	Eclipse	Disapp.	7	5	30	46.0
II.	Eclipse	Disapp.	2	1	37	50.2	I.	Occult.	Reapp.	7	8	40	
II.	Occult.	Reapp.	2	6	29		II.	Shadow	Ingress W.	7	9	15	
I.	Shadow	Ingress	2	19	21		II.	Transit	Ingress W.	7	11	2	
I.	Transit	Ingress	2	20	18		II.	Shadow	Egress W.	7	12	9	
I.	Shadow	Egress	2	21	40		II.	Transit	Egress W.	7	13	57	
I.	Transit	Egress	2	22	38		III.	Shadow	Ingress W.	7	17	37	
I.	Eclipse	Disapp. W.	3	16	34	5.3	III.	Shadow	Egress	7	21	1	
I.	Occult.	Reapp.	3	19	47		III.	Transit	Ingress	7	21	5	
II.	Shadow	Ingress	3	19	58		III.	Transit	Egress	8	0	35	
II.	Transit	Ingress	3	21	53		I.	Shadow	Ingress	8	2	46	
II.	Shadow	Egress	3	22	52		I.	Transit	Ingress	8	3	39	
II.	Transit	Egress	4	0	48		I.	Shadow	Egress	8	5	5	
III.	Eclipse	Disapp.	4	3	42	28.7	I.	Transit	Egress	8	5	59	
III.	Eclipse	Reapp.	4	6	57	35.5	I.	Eclipse	Disapp.	8	23	59	9.3
III.	Occult.	Disapp.	4	7	22		I.	Occult.	Reapp.	9	3	7	
III.	Occult.	Reapp. W.	4	10	52		II.	Eclipse	Disapp.	9	4	14	12.5
I.	Shadow	Ingress W.	4	13	49		II.	Occult.	Reapp. W.	9	8	50	
I.	Transit	Ingress W.	4	14	45		I.	Shadow	Ingress	9	21	15	
I.	Shadow	Egress W.	4	16	8		I.	Transit	Ingress	9	22	5	
I.	Transit	Egress W.	4	17	5		I.	Shadow	Egress	9	23	34	
IV.	Eclipse	Disapp.	5	0	30	8.8	I.	Transit	Egress	10	0	25	
IV.	Eclipse	Reapp.	5	4	11	50.0	I.	Eclipse	Disapp. W.	10	18	27	29.5
IV.	Occult.	Disapp. W.	5	9	2		I.	Occult.	Reapp.	10	21	33	
I.	Eclipse	Disapp. W.	5	11	2	25.7	II.	Shadow	Ingress	10	22	32	
IV.	Occult.	Reapp. W.	5	13	13		II.	Transit	Ingress	11	0	11	
I.	Occult.	Reapp. W.	5	14	14		II.	Shadow	Egress	11	1	26	
II.	Eclipse	Disapp. W.	5	14	55	31.5	II.	Transit	Egress	11	3	6	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

DECEMBER.

			d	h	m	s
III.	Eclipse	Disapp.	11	7	40	30.4
III.	Occult.	Reapp. W.	11	14	19	
I.	Shadow	Ingress W.	11	15	43	
I.	Transit	Ingress W.	11	16	31	
I.	Shadow	Egress W.	11	18	2	
I.	Transit	Egress	11	18	51	
I.	Eclipse	Disapp. W.	12	12	55	55.7
I.	Occult.	Reapp. W.	12	16	0	
II.	Eclipse	Disapp. W.	12	17	31	55.0
II.	Occult.	Reapp.	12	22	0	
IV.	Shadow	Ingress W.	13	8	40	
I.	Shadow	Ingress W.	13	10	12	
I.	Transit	Ingress W.	13	10	58	
I.	Shadow	Egress W.	13	12	31	
IV.	Shadow	Egress W.	13	12	33	
I.	Transit	Egress W.	13	13	18	
IV.	Transit	Ingress W.	13	15	42	
IV.	Transit	Egress	13	19	54	
I.	Eclipse	Disapp.	14	7	24	13.4
I.	Occult.	Reapp. W.	14	10	26	
II.	Shadow	Ingress W.	14	11	49	
II.	Transit	Ingress W.	14	13	19	
II.	Shadow	Egress W.	14	14	43	
II.	Transit	Egress W.	14	16	14	
III.	Shadow	Ingress	14	21	35	
III.	Transit	Ingress	15	0	30	
III.	Shadow	Egress	15	1	0	
III.	Transit	Egress	15	4	1	
I.	Shadow	Ingress	15	4	40	
I.	Transit	Ingress	15	5	25	
I.	Shadow	Egress	15	6	59	
I.	Transit	Egress	15	7	45	
I.	Eclipse	Disapp.	16	1	52	38.6
I.	Occult.	Reapp.	16	4	52	
II.	Eclipse	Disapp.	16	6	50	34.3
II.	Occult.	Reapp. W.	16	11	10	
I.	Shadow	Ingress	16	23	9	
I.	Transit	Ingress	16	23	51	
I.	Shadow	Egress	17	1	28	
I.	Transit	Egress	17	2	11	
I.	Eclipse	Disapp.	17	20	21	0.6
I.	Occult.	Reapp.	17	23	18	
II.	Shadow	Ingress	18	1	6	
II.	Transit	Ingress	18	2	27	
II.	Shadow	Egress	18	4	0	
II.	Transit	Egress	18	5	22	
III.	Eclipse	Disapp. W.	18	11	39	12.3
I.	Shadow	Ingress W.	18	17	37	
III.	Occult.	Reapp. W.	18	17	43	
I.	Transit	Ingress W.	18	18	17	
I.	Shadow	Egress	18	19	56	
I.	Transit	Egress	18	20	37	
I.	Eclipse	Disapp. W.	19	14	49	24.8
I.	Occult.	Reapp. W.	19	17	44	
II.	Eclipse	Disapp.	19	20	8	18.2
II.	Occult.	Reapp.	20	0	18	
I.	Shadow	Ingress W.	20	12	6	
I.	Transit	Ingress W.	20	12	43	
I.	Shadow	Egress W.	20	14	25	
I.	Transit	Egress W.	20	15	3	
I.	Eclipse	Disapp. W.	21	9	17	48.0
I.	Occult.	Reapp. W.	21	12	10	
II.	Shadow	Ingress W.	21	14	23	
II.	Transit	Ingress W.	21	15	35	
II.	Shadow	Egress W.	21	17	18	
IV.	Eclipse	Disapp. W.	21	18	30	24.4
II.	Transit	Egress W.	21	18	31	
IV.	Eclipse	Reapp.	21	22	18	54.0
IV.	Occult.	Disapp.	21	23	55	
III.	Shadow	Ingress	22	1	33	
III.	Transit	Ingress	22	3	51	
IV.	Occult.	Reapp.	22	4	8	
III.	Shadow	Egress	22	4	59	
I.	Shadow	Ingress	22	6	34	
I.	Transit	Ingress	22	7	9	
III.	Transit	Egress	22	7	22	
I.	Shadow	Egress W.	22	8	53	
I.	Transit	Egress W.	22	9	29	
I.	Eclipse	Disapp.	23	3	46	15.2
I.	Occult.	Reapp.	23	6	37	
II.	Eclipse	Disapp. W.	23	9	26	55.8
II.	Occult.	Reapp. W.	23	13	27	
I.	Shadow	Ingress	24	1	3	
I.	Transit	Ingress	24	1	36	
I.	Shadow	Egress	24	3	22	
I.	Transit	Egress	24	3	56	
I.	Eclipse	Disapp.	24	22	14	39.0
I.	Occult.	Reapp.	25	1	3	
II.	Shadow	Ingress	25	3	40	
II.	Transit	Ingress	25	4	42	
II.	Shadow	Egress	25	6	35	
II.	Transit	Egress W.	25	7	38	
III.	Eclipse	Disapp. W.	25	15	37	44.9
I.	Shadow	Ingress	25	19	31	
I.	Transit	Ingress	25	20	2	
III.	Occult.	Reapp.	25	21	2	
I.	Shadow	Egress	25	21	50	
I.	Transit	Egress	25	22	22	

W.—Visible at Washington.

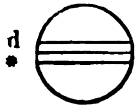
WASHINGTON MEAN TIME.

DECEMBER.

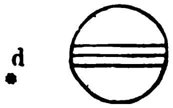
			d	h	m	s
I.	Eclipse	Disapp. W.	26	16	43	5.1
I.	Occult.	Reapp.	26	19	28	
II.	Eclipse	Disapp.	26	22	44	41.1
II.	Occult.	Reapp.	27	2	35	
I.	Shadow	Ingress W.	27	14	0	
I.	Transit	Ingress W.	27	14	28	
I.	Shadow	Egress W.	27	16	19	
I.	Transit	Egress W.	27	16	48	
I.	Eclipse	Disapp. W.	28	11	11	30.1
I.	Occult.	Reapp. W.	28	13	54	
II.	Shadow	Ingress W.	28	16	58	
II.	Transit	Ingress W.	28	17	49	
II.	Shadow	Egress	28	19	52	
II.	Transit	Egress	28	20	45	
III.	Shadow	Ingress	29	5	32	
III.	Transit	Ingress W.	29	7	10	
I.	Shadow	Ingress W.	29	8	28	
I.	Transit	Ingress W.	29	8	54	
III.	Shadow	Egress W.	29	8	58	
III.	Transit	Egress W.	29	10	41	
I.	Shadow	Egress W.	29	10	47	
I.	Transit	Egress W.	29	11	14	
IV.	Shadow	Ingress	30	2	39	
I.	Eclipse	Disapp.	30	5	39	59.5
IV.	Transit	Ingress	30	6	13	
IV.	Shadow	Egress	30	6	38	
I.	Occult.	Reapp. W.	30	8	20	
IV.	Transit	Egress W.	30	10	26	
II.	Eclipse	Disapp. W.	30	12	3	16.5
II.	Occult.	Reapp. W.	30	15	43	
I.	Shadow	Ingress	31	2	57	
I.	Transit	Ingress	31	3	20	
I.	Shadow	Egress	31	5	16	
I.	Transit	Egress	31	5	40	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

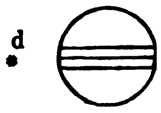
I.



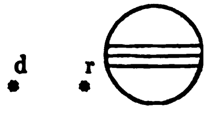
III.



II.



IV.



W.—Visible at Washington.

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE I.

		h m			h m			h m			h m
Jan.	1	10 30.9	Mar.	18	12 24.9	Aug.	1	21 9.6	Oct.	17	0 14.7
	3	4 57.3		20	6 54.3		3	15 39.8		18	18 43.1
	4	23 23.3		22	1 23.6		5	10 9.9		20	13 11.4
	6	17 49.6		23	19 53.1		7	4 39.9		22	7 39.7
	8	12 16.2		25	14 22.5		8	23 10.0		24	2 7.9
	10	6 42.5		27	8 52.1		10	17 40.1		25	20 36.1
	12	1 9.1		29	3 21.5		12	12 10.1		27	15 4.0
	13	19 35.7		30	21 51.2		14	6 40.0		29	9 32.0
	15	14 2.5	April	1	16 20.8		16	1 10.0		31	3 59.9
	17	8 29.2		3	10 50.6		17	19 39.9	Nov.	1	22 27.8
	19	2 56.1		5	5 20.3		19	14 9.8		3	16 55.6
	20	21 23.1		6	23 50.1		21	8 39.7		5	11 23.4
	22	15 50.1		8	18 19.9		23	3 9.6		7	5 51.0
	24	10 17.1		10	12 49.8		24	21 39.4		9	0 18.6
	26	4 44.3		12	7 19.6		26	16 9.2		10	18 46.2
	27	23 11.5		14	1 49.6		28	10 38.9		12	13 13.6
	29	17 38.9		15	20 19.4		30	5 8.7		14	7 41.0
	31	12 6.2		17	14 49.5		31	23 38.3		16	2 8.3
Feb.	2	6 33.7		19	9 19.5	Sept.	2	18 7.9		17	20 35.6
	4	1 1.2		21	3 49.7		4	12 37.5		19	15 2.8
	5	19 28.9		22	22 19.7		6	7 7.1		21	9 29.9
	7	13 56.5		24	16 49.8		8	1 36.6		23	3 56.9
	9	8 24.4		26	11 19.9		9	20 6.1		24	22 23.8
	11	2 52.3		28	5 50.2		11	14 35.5		26	16 50.7
	12	21 20.3		30	0 20.3		13	9 5.0		28	11 17.5
	14	15 48.2	May	1	18 50.5		15	3 34.3		30	5 44.4
	16	10 16.4		3	13 20.7		16	22 3.6	Dec.	2	0 11.0
	18	4 44.5		5	7 51.0		18	16 33.0		3	18 37.7
	19	23 12.8		7	2 21.2		20	11 2.2		5	13 4.2
	21	17 41.0		8	20 51.6		22	5 31.4		7	7 30.8
	23	12 9.6		10	15 21.9		24	0 0.5		9	1 57.3
	25	6 38.0		12	9 52.2		25	18 29.6		10	20 23.6
	27	1 6.6		14	4 22.5		27	12 58.7		12	14 50.0
	28	19 35.1		15	22 52.9		29	7 27.7		14	9 16.2
March	2	14 3.8		17	17 23.2	Oct.	1	1 56.6		16	3 42.4
	4	8 32.5		19	11 53.7		2	20 25.5		17	22 8.6
	6	3 1.4		21	6 24.0		4	14 54.4		19	16 34.7
	7	21 30.3		23	0 54.5		6	9 23.2		21	11 0.8
	9	15 59.3		24	19 24.8		8	3 52.0		23	5 26.9
	11	10 28.3		26	13 55.2		9	22 20.7		24	23 52.8
	13	4 57.4		28	8 25.6		11	16 49.3		26	18 18.7
	14	23 26.5		30	2 56.1		13	11 17.9		28	12 44.7
	16	17 55.7		31	21 26.5		15	5 46.3		30	7 10.9

SATELLITE II.

		h m			h m			h m			h m
Jan.	1	23 57.5	Jan.	30	9 15.4	Feb.	27	19 9.2	Mar.	28	5 36.1
	5	13 5.5	Feb.	2	22 27.5	Mar.	3	8 25.8		31	18 56.4
	9	2 13.9		6	11 40.3		6	21 43.0	April	4	8 17.0
	12	15 23.0		10	0 53.6		10	11 0.7		7	21 38.1
	16	4 32.5		13	14 7.6		14	0 19.0		11	10 59.4
	19	17 42.3		17	3 22.0		17	13 37.7		15	0 21.0
	23	6 52.8		20	16 37.2		21	2 56.7		18	13 42.9
	26	20 3.8		24	5 52.9		24	16 16.2		22	3 5.2

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE II.

	h m		h m		h m		h m
April 25	16 27.7	Aug. 14	0 6.1	Oct. 2	19 25.7	Nov. 18	0 11.7
29	5 50.5	17	13 30.8	6	8 46.7	21	13 24.5
May 2	19 13.5	21	2 54.6	9	22 6.1	25	2 37.8
6	8 36.6	24	16 19.0	13	11 26.1	28	15 49.4
9	22 0.0	28	5 42.4	17	0 44.6	Dec. 2	5 1.4
13	11 23.6	31	19 6.4	20	14 3.7	5	18 11.9
17	0 47.3	Sept. 4	8 29.3	24	3 21.2	9	7 22.9
20	14 11.2	7	21 53.0	27	16 39.2	12	20 32.3
24	3 35.3	11	11 15.4	31	5 55.5	16	9 42.2
27	16 59.6	15	0 38.4	Nov. 3	19 12.4	19	22 50.7
31	6 23.9	18	14 0.1	7	8 27.6	23	11 59.6
Aug. 3	7 52.7	22	3 22.6	10	21 43.3	27	1 7.4
6	21 17.1	25	16 43.6	14	10 57.3	30	14 15.6
10	10 41.0	29	6 5.4				

SATELLITE III.

	h m		h m		h m		h m
Jan. 1	7 21.3	Mar. 21	0 21.2	Aug. 4	12 4.7	Oct. 22	10 44.5
8	10 42.3	28	4 30.6	11	16 29.9	29	14 39.9
15	14 7.5	April 4	8 43.4	18	20 54.0	Nov. 5	18 30.8
22	17 36.4	11	12 59.6	26	1 16.2	12	22 17.5
29	21 10.1	18	17 18.2	Sept. 2	5 36.5	20	1 58.8
Feb. 6	0 48.5	25	21 39.6	9	9 55.2	27	5 35.0
13	4 31.9	May 3	2 2.2	16	14 11.2	Dec. 4	9 6.6
20	8 20.7	10	6 26.4	23	18 25.1	11	12 33.8
27	12 14.2	17	10 51.9	30	22 35.4	18	15 57.5
March 6	16 12.9	24	15 18.7	Oct. 8	2 42.3	25	19 16.7
13	20 15.1	31	19 46.6	15	6 45.3		

SATELLITE IV.

	h m		h m		h m		h m
April 30	22 5.0	Aug. 10	2 13.4	Sept. 29	13 54.0	Nov. 18	19 17.3
May 17	18 28.9	26	22 34.6	Oct. 16	8 36.1	Dec. 5	11 7.5
		Sept. 12	18 30.7	Nov. 2	2 26.0	22	2 1.2

In the following Tables x and y are the rectangular coördinates for each Satellite, referred to the centre of the primary and the major and minor axes of the apparent ellipse described by the Satellite. x is positive on the *east* side of the planet; negative on the *west* side. y is positive when *north;* negative when *south.*

x' and y' are the coördinates which correspond to a constant value of the major axis and maximum value of the minor axis, as seen from the sun at its mean distance.

The factors by which x' and y' must be multiplied to obtain the coördinates x and y at any time, are given for each Satellite on pages 480–481.

p is the inclination of the minor axis of the apparent ellipse to the circle of declination; reckoned from the north, + towards the east.

COÖRDINATES IN THE MEAN APPARENT ELLIPSE, DESCRIBED BY THE SATELLITE, AND FOR THE MEAN DISTANCE OF JUPITER FROM THE SUN, FOR THE TIME (*t*) AFTER GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE I.

t	x'	y'	t	x'	y'	t	x'	y'
d h m	″	″	d h m	″	″	d h m	″	″
0 0 0	+ 0.0	+ 6.6	0 15 0	+ 87.1	− 4.0	1 6 0	−105.1	− 1.8
0 0 20	5.4	6.6	0 15 20	83.7	4.3	1 6 20	106.4	1.5
0 0 40	10.8	6.6	0 15 40	80.1	4.5	1 6 40	107.5	1.2
0 1 0	16.1	6.6	0 16 0	76.4	4.7	1 7 0	108.3	0.8
0 1 20	21.4	6.5	0 16 20	72.5	5.0	1 7 20	108.8	0.5
0 1 40	26.6	6.4	0 16 40	68.4	5.2	1 7 40	109.1	− 0.2
0 2 0	+ 31.8	+ 6.3	0 17 0	+ 64.1	− 5.4	1 8 0	−109.1	+ 0.1
0 2 20	36.9	6.2	0 17 20	59.6	5.5	1 8 20	108.9	0.5
0 2 40	42.0	6.1	0 17 40	55.0	5.7	1 8 40	108.4	0.8
0 3 0	46.9	6.0	0 18 0	50.3	5.9	1 9 0	107.6	1.1
0 3 20	51.7	5.8	0 18 20	45.5	6.0	1 9 20	106.6	1.4
0 3 40	56.4	5.7	0 18 40	40.5	6.1	1 9 40	105.3	1.8
0 4 0	+ 60.9	+ 5.5	0 19 0	+ 35.5	− 6.3	1 10 0	−103.8	+ 2.1
0 4 20	65.3	5.3	0 19 20	30.4	6.4	1 10 20	102.0	2.4
0 4 40	69.5	5.1	0 19 40	25.2	6.4	1 10 40	99.9	2.7
0 5 0	73.6	4.9	0 20 0	19.9	6.5	1 11 0	97.6	3.0
0 5 20	77.5	4.7	0 20 20	14.6	6.6	1 11 20	95.1	3.3
0 5 40	81.2	4.4	0 20 40	9.2	6.6	1 11 40	92.3	3.5
0 6 0	+ 84.7	+ 4.2	0 21 0	+ 3.8	− 6.6	1 12 0	− 89.3	+ 3.8
0 6 20	88.0	3.9	0 21 20	− 1.5	6.6	1 12 20	86.1	4.1
0 6 40	91.0	3.7	0 21 40	6.9	6.6	1 12 40	82.7	4.3
0 7 0	94.0	3.4	0 22 0	12.3	6.6	1 13 0	79.1	4.6
0 7 20	96.6	3.1	0 22 20	17.6	6.5	1 13 20	75.3	4.8
0 7 40	99.0	2.8	0 22 40	22.9	6.5	1 13 40	71.3	5.0
0 8 0	+101.1	+ 2.5	0 23 0	− 28.1	− 6.4	1 14 0	− 67.1	+ 5.2
0 8 20	103.0	2.2	0 23 20	33.3	6.3	1 14 20	62.8	5.4
0 8 40	104.7	1.9	0 23 40	38.4	6.2	1 14 40	58.3	5.6
0 9 0	106.1	1.6	1 0 0	43.4	6.1	1 15 0	53.7	5.8
0 9 20	107.3	1.3	1 0 20	48.3	5.9	1 15 20	49.0	5.9
0 9 40	108.1	0.9	1 0 40	53.1	5.8	1 15 40	44.1	6.1
0 10 0	+108.7	+ 0.6	1 1 0	− 57.7	− 5.6	1 16 0	− 39.1	+ 6.2
0 10 20	109.1	+ 0.3	1 1 20	62.2	5.4	1 16 20	34.0	6.3
0 10 40	109.1	− 0.1	1 1 40	66.6	5.2	1 16 40	28.9	6.4
0 11 0	109.0	0.4	1 2 0	70.8	5.0	1 17 0	23.7	6.5
0 11 20	108.6	0.7	1 2 20	74.8	4.8	1 17 20	18.4	6.5
0 11 40	107.9	1.0	1 2 40	78.6	4.6	1 17 40	13.0	6.6
0 12 0	+106.9	− 1.3	1 3 0	− 82.2	− 4.4	1 18 0	− 7.7	+ 6.6
0 12 20	105.7	1.7	1 3 20	85.6	4.1	1 18 20	− 2.3	6.6
0 12 40	104.2	2.0	1 3 40	88.9	3.8	1 18 40	+ 3.1	6.6
0 13 0	102.5	2.3	1 4 0	91.9	3.6	1 19 0	8.5	6.6
0 13 20	100.5	2.6	1 4 20	94.7	3.3	1 19 20	13.8	6.6
0 13 40	98.3	2.9	1 4 40	97.3	3.0	1 19 40	19.1	6.5
0 14 0	+ 95.8	− 3.2	1 5 0	− 99.6	− 2.7	1 20 0	+ 24.4	+ 6.5
0 14 20	93.1	3.5	1 5 20	101.7	2.4			
0 14 40	+ 90.2	− 3.7	1 5 40	−103.5	− 2.1			

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE II.

t	x′	y′	t	x′	y′	t	x′	y′
d h m	″	″	d h m	″	″	d h m	″	″
0 0 0	+ 0.0	+12.2	1 6 0	+139.5	− 7.3	2 12 0	−166.4	− 3.5
0 0 40	8.5	12.2	1 6 40	134.2	7.7	2 12 40	168.6	2.9
0 1 20	17.0	12.1	1 7 20	128.6	8.2	2 13 20	170.4	2.3
0 2 0	25.5	12.1	1 8 0	122.7	8.6	2 14 0	171.9	1.8
0 2 40	33.9	12.0	1 8 40	116.5	9.0	2 14 40	173.0	1.2
0 3 20	42.2	11.8	1 9 20	110.1	9.4	2 15 20	173.6	− 0.6
0 4 0	+ 50.5	+11.7	1 10 0	+103.4	− 9.8	2 16 0	−173.8	0.0
0 4 40	58.6	11.5	1 10 40	96.4	10.1	2 16 40	173.6	+ 0.6
0 5 20	66.5	11.3	1 11 20	89.2	10.5	2 17 20	172.9	1.2
0 6 0	74.3	11.0	1 12 0	81.7	10.8	2 18 0	171.8	1.8
0 6 40	81.9	10.8	1 12 40	74.1	11.0	2 18 40	170.3	2.4
0 7 20	89.4	10.5	1 13 20	66.3	11.3	2 19 20	168.4	3.0
0 8 0	+ 96.6	+10.1	1 14 0	+ 58.3	−11.5	2 20 0	−166.2	+ 3.5
0 8 40	103.6	9.8	1 14 40	50.2	11.7	2 20 40	163.5	4.1
0 9 20	110.3	9.4	1 15 20	42.0	11.8	2 21 20	160.4	4.7
0 10 0	116.7	9.0	1 16 0	33.7	12.0	2 22 0	156.9	5.2
0 10 40	122.9	8.6	1 16 40	25.3	12.1	2 22 40	153.0	5.8
0 11 20	128.8	8.2	1 17 20	16.8	12.1	2 23 20	148.8	6.3
0 12 0	+134.4	+ 7.7	1 18 0	+ 8.3	−12.2	3 0 0	−144.2	+ 6.8
0 12 40	139.6	7.3	1 18 40	− 0.2	12.2	3 0 40	139.3	7.3
0 13 20	144.5	6.8	1 19 20	8.8	12.2	3 1 20	134.1	7.8
0 14 0	149.0	6.3	1 20 0	17.3	12.1	3 2 0	128.5	8.2
0 14 40	153.2	5.7	1 20 40	25.7	12.1	3 2 40	122.6	8.6
0 15 20	157.0	5.2	1 21 20	34.1	12.0	3 3 20	116.4	9.0
0 16 0	+160.5	+ 4.7	1 22 0	− 42.4	−11.8	3 4 0	−109.9	+ 9.4
0 16 40	163.6	4.1	1 22 40	50.6	11.7	3 4 40	103.1	9.8
0 17 20	166.3	3.5	1 23 20	58.7	11.5	3 5 20	96.1	10.1
0 18 0	168.6	3.0	2 0 0	66.7	11.3	3 6 0	88.9	10.5
0 18 40	170.5	2·4	2 0 40	74.5	11.0	3 6 40	81.5	10.8
0 19 20	171.9	1.8	2 1 20	82.1	10.7	3 7 20	73.9	11.0
0 20 0	+172.9	+ 1.2	2 2 0	− 89.5	−10.4	3 8 0	− 66.1	+11.3
0 20 40	173.6	+ 0.6	2 2 40	96.7	10.1	3 8 40	58.1	11.5
0 21 20	173.8	0.0	2 3 20	103.7	9.8	3 9 20	50.0	11.7
0 22 0	173.6	− 0.6	2 4 0	110.4	9.4	3 10 0	41.8	11.8
0 22 40	172.9	1.2	2 4 40	116.8	9.0	3 10 40	33.5	12.0
0 23 20	171.8	1.8	2 5 20	123.0	8.6	3 11 20	25.1	12.1
1 0 0	+170.4	− 2.4	2 6 0	−128.9	− 8.2	3 12 0	− 16.6	+12.1
1 0 40	168.5	3.0	2 6 40	134.5	7.7	3 12 40	− 8.1	12.2
1 1 20	166.2	3.5	2 7 20	139.7	7.2	3 13 20	+ 0.4	12.2
1 2 0	163.5	4.1	2 8 0	144.6	6.7	3 14 0	9.0	12.2
1 2 40	160.4	4.7	2 8 40	149.1	6.2	3 14 40	17.5	12.1
1 3 20	157.0	5.2	2 9 20	153.3	5.7	3 15 20	26.0	12.1
1 4 0	+153.2	− 5.8	2 10 0	−157.1	− 5.2	3 16 0	+ 34.4	+12.0
1 4 40	149.0	6.3	2 10 40	160.6	4.6			
1 5 20	+144.4	− 6.8	2 11 20	−163.7	− 4.1			

[illegible] THE [illegible] APPARENT ELLIPSE.

							x′	y′
							′	″
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	−262.3	− 5.6
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	266.4	4.8
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	272.6	3.2
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	274.7	2.3
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	276.2	1.5
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	− 0.6
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	+ 0.2
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	276.7	1.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.9
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2.7
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.6
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	+ 4.4
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5.2
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.8
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7.6
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8.3
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	−256.6	+ 9.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	250.3	9.8
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	241.4	10.5
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	11.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	214.1	11.8
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12.4
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	−184.9	+13.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	174.7	13.5
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	164.1	14.0
[illegible]	[illegible]	4.4	4 0 0	99.0	[illegible]	[illegible]	153.0	14.5
1 13 20	271.1	3.6	4 1 20	111.5	[illegible]	[illegible]	141.5	15.0
1 14 40	273.6	2.7	4 2 40	122.7	[illegible]	[illegible]	129.7	15.4
1 16 0	+275.5	+ 1.9	4 4 0	−135.7	[illegible]	[illegible]	−117.6	+15.8
1 17 20	276.7	1.1	4 5 20	147.2	[illegible]	[illegible]	105.2	16.1
1 18 40	277.2	+ 0.2	4 6 40	158.4	[illegible]	[illegible]	92.6	16.4
1 20 0	277.0	− 0.6	4 8 0	169.3	[illegible]	[illegible]	79.8	16.7
1 21 20	276.9	1.5	4 9 20	179.8	[illegible]	6 21 20	66.8	16.9
1 22 40	274.7	2.3	4 10 40	189.9	12.7	6 22 40	53.6	17.1
2 0 0	+272.6	− 3.2	4 12 0	−199.5	−12.1	7 0 0	− 40.3	+17.2
2 1 20	269.8	4.0	4 13 20	208.6	11.5	7 1 20	26.9	17.3
2 2 40	266.4	4.8	4 14 40	217.3	10.8	[illegible]	− 13.4	17.4
2 4 0	262.3	5.6	4 16 0	225.5	10.1	[illegible]	+ 0.1	17.4
2 5 20	257.6	6.4	4 17 20	233.1	9.4	[illegible]	13.6	17.4
2 6 40	252.3	7.2	4 18 40	240.1	8.7	[illegible]	27.0	17.3
2 8 0	+246.4	− 8.0	4 20 0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2 9 20	240.0	8.7	4 21 20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2 10 40	+233.0	− 9.4	4 22 40	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE IV.

t	x′	y′	t	x′	y′	t	x′	y′
d h	″	″	d h	″	″	d h	″	″
0 0	+ 0.0	+34.8	5 18	+406.2	−19.3	11 12	−449.0	−13.5
0 3	22.8	34.8	5 21	393.1	20.6	11 15	457.4	12.0
0 6	45.6	34.7	6 0	379.2	21.9	11 18	464.8	10.5
0 9	68.3	34.5	6 3	364.4	23.1	11 21	471.2	8.9
0 12	90.9	34.2	6 6	348.8	24.3	12 0	476.5	7.3
0 15	113.2	33.9	6 9	332.5	25.5	12 3	480.8	5.7
0 18	+135.3	+33.5	6 12	+315.4	−26.6	12 6	−484.0	− 4.1
0 21	157.1	33.0	6 15	297.6	27.6	12 9	486.2	2.5
1 0	178.5	32.4	6 18	279.2	28.5	12 12	487.3	− 0.8
1 3	199.6	31.8	6 21	260.2	29.4	12 15	487.3	+ 0.8
1 6	220.3	31.1	7 0	240.6	30.3	12 18	486.3	2.4
1 9	240.4	30.3	7 3	220.5	31.1	12 21	484.2	4.0
1 12	+260.0	+29.5	7 6	+199.9	−31.8	13 0	−480.9	+ 5.7
1 15	279.0	28.6	7 9	178.8	32.4	13 3	476.6	7.3
1 18	297.4	27.6	7 12	157.4	33.0	13 6	471.3	8.9
1 21	315.2	26.6	7 15	135.6	33.5	13 9	465.0	10.5
2 0	332.3	25.5	7 18	113.5	33.9	13 12	457.6	12.0
2 3	348.6	24.3	7 21	91.2	34.2	13 15	449.3	13.5
2 6	+364.1	+23.1	8 0	+ 68.7	−34.5	13 18	−440.0	+15.0
2 9	378.9	21.9	8 3	46.0	34.7	13 21	429.7	16.4
2 12	392.9	20.6	8 6	23.2	34.8	14 0	418.5	17.8
2 15	406.0	19.3	8 9	+ 0.3	34.8	14 3	406.3	19.2
2 18	418.2	17.9	8 12	− 22.5	34.8	14 6	393.2	20.6
2 21	429.5	16.5	8 15	45.3	34.7	14 9	379.3	21.9
3 0	+439.8	+15.0	8 18	− 68.0	−34.5	14 12	−364.6	+23.1
3 3	449.1	13.5	8 21	90.5	34.2	14 15	349.1	24.3
3 6	457.5	12.0	9 0	112.9	33.9	14 18	332.8	25.4
3 9	464.9	10.5	9 3	135.0	33.5	14 21	315.7	26.5
3 12	471.3	8.9	9 6	156.8	33.0	15 0	298.0	27.5
3 15	476.6	7.3	9 9	178.2	32.4	15 3	279.6	28.5
3 18	+480.8	+ 5.7	9 12	−199.3	−31.8	15 6	−260.5	+29.4
3 21	484.0	4.1	9 15	220.0	31.1	15 9	240.9	30.3
4 0	486.2	2.5	9 18	240.1	30.3	15 12	220.8	31.1
4 3	487.3	+ 0.8	9 21	259.7	29.5	15 15	200.2	31.8
4 6	487.3	− 0.8	10 0	278.7	28.6	15 18	179.2	32.4
4 9	486.3	2.4	10 3	297.2	27.6	15 21	157.7	33.0
4 12	+484.2	− 4.1	10 6	−315.0	−26.6	16 0	−135.9	+33.5
4 15	480.9	5.7	10 9	332.1	25.5	16 3	113.8	33.9
4 18	476.6	7.3	10 12	348.4	24.4	16 6	91.5	34.2
4 21	471.3	8.9	10 15	363.9	23.2	16 9	69.0	34.5
5 0	465.0	10.4	10 18	378.7	21.9	16 12	46.3	34.7
5 3	457.7	12.0	10 21	392.7	20.6	16 15	23.5	34.8
5 6	+449.3	−13.5	11 0	−405.8	−19.3	16 18	− 0.6	+34.8
5 9	439.9	15.0	11 3	418.0	17.9	16 21	+ 22.2	34.8
5 12	429.6	16.4	11 6	429.3	16.5	17 0	+ 45.0	+34.7
5 15	+418.4	−17.9	11 9	−439.6	−15.0			

SATELLITE I.

Date 1871	At Geocentric Superior Conjunction: Factor for x	Factor for y	p	At Time of Eclipse: x	y	Date 1871	At Geocentric Superior Conjunction: Factor for x	Factor for y	p	At Time of Eclipse: x	y
Jan 1	1.215	+0.888	−4 17.7	+41	+6	Aug 1	0.8[illegible]	+0.[illegible]	+ [illegible]	−[illegible]	[illegible]
8	1.230	0.861	4 [illegible]	34	6	8	0.861	0.[illegible]	[illegible] 44	[illegible]	
15	1.211	0.872	4 36.5	37	6	15	0.8[illegible]	0.177	[illegible]	[illegible]	
22	1.189	0.850	5 10.2	39	5	22	0.878	0.[illegible]	[illegible]	[illegible]	[illegible]
29	1.166	0.827	5 11.5	40	5	30	0.[illegible]	0.[illegible]	10 [illegible]	[illegible]	[illegible]
Feb 5	1.141	+0.801	−5 24.7	+41	+5	Sept 6	0.[illegible]	+0.[illegible]	+11 [illegible]	−[illegible]	[illegible]
12	1.116	0.778	5 24.5	41	5	13	0.916	0.[illegible]	11 [illegible]	[illegible]	[illegible]
19	1.091	0.754	5 20.1	41	5	20	0.931	0.[illegible]	12	[illegible]	[illegible]
27	1.066	0.729	5 11	40	5	27	0.948	0.[illegible]	12 [illegible]	[illegible]	[illegible]
Mar 6	1.042	0.7[illegible]	4 5[illegible] 1	40	4	Oct 4	0.966	0.[illegible]	12 [illegible]	[illegible]	[illegible]
13	1.018	+0.682	−4 41.2	+39	+4	11	0.98[illegible]	+0.[illegible]	+13 12	−[illegible]	[illegible]
20	0.996	0.661	4 20.4	38	4	18	1.006	0.[illegible]	13 [illegible]	[illegible]	[illegible]
27	0.97[illegible]	0.64[illegible]	3 [illegible]	37	4	25	1.02[illegible]	0.[illegible]	13 41.1	[illegible]	[illegible]
Apr 3	0.9[illegible]	0.6[illegible]	3 [illegible]	36	4	Nov 1	1.0[illegible]	0.[illegible]	13 [illegible]	[illegible]	[illegible]
10	0.9[illegible]	0.6[illegible]	2 [illegible]	34	4	9	1.074	0.[illegible]	13 [illegible]	[illegible]	[illegible]
17	0.922	0.[illegible]	2 24	32	4	16	1.097	0.111	13 [illegible]	[illegible]	[illegible]
24	0.907	+0.566	−1 [illegible]	+30	+4	23	1.1[illegible]	+0.[illegible]	+13 [illegible]	−[illegible]	[illegible]
May 1	0.894	0.[illegible]	1 11.8	29	3	30	1.142	0.[illegible]	13 [illegible]	[illegible]	[illegible]
8	0.882	0.[illegible]	−0 12.6	27	3	Dec 7	1.162	0.117	13 41	[illegible]	[illegible]
15	0.872	0.[illegible]	+0 [illegible]	26	3	14	1.1[illegible]	0.[illegible]	13 [illegible]	[illegible]	[illegible]
22	0.863	0.[illegible]	0 [illegible]	24	3	21	1.1[illegible]	0.[illegible]	13 [illegible]	[illegible]	[illegible]
29	0.856	+0.467	+1 14.1	+22	+3	28	1.21[illegible]	+0.[illegible]	+13 [illegible]	−[illegible]	[illegible]

SATELLITE II.

Date 1871	At Geocentric Superior Conjunction: Factor for x	Factor for y	p	At Time of Eclipse: x	y	Date 1871	At Geocentric Superior Conjunction: Factor for x	Factor for y	p	At Time of Eclipse: x	y
Jan 1	1.244	+0.[illegible]	−[illegible]	+47	+10	Aug 3	[illegible]	+0.[illegible]	+ [illegible]	−[illegible]	[illegible]
9	1.2[illegible]	[illegible]	4 14	44	10	10	[illegible]	[illegible]	[illegible]	[illegible]	
16	1.2[illegible]	[illegible]	4 [illegible]	4[illegible]	9	17	[illegible]	[illegible]	[illegible]	[illegible]	
23	1.1[illegible]	0.7[illegible]	4 [illegible]	4[illegible]	9	24	[illegible]	[illegible]	[illegible]	[illegible]	
30	1.1[illegible]	0.7[illegible]	4 [illegible]	[illegible]	[illegible]	31	[illegible]	[illegible]	11 [illegible]	[illegible]	
Feb 6	1.1[illegible]	+0.[illegible]	−4 [illegible]	+[illegible]	+[illegible]	Sept 7	[illegible]	+0.[illegible]	+11 [illegible]	[illegible]	[illegible]
[illegible]	1.1[illegible]	[illegible]	4 [illegible]	[illegible]	[illegible]	1[illegible]	[illegible]	[illegible]	12 [illegible]	[illegible]	
[illegible]	1.[illegible]	[illegible]	4 [illegible]	[illegible]	[illegible]	2[illegible]	[illegible]	[illegible]	12 [illegible]	[illegible]	
[illegible]	1.[illegible]	[illegible]	4 44.6	[illegible]	[illegible]	2[illegible]	[illegible]	[illegible]	12 [illegible]	[illegible]	
Mar 6	1.[illegible]	[illegible]	4 [illegible]	[illegible]	[illegible]	Oct 6	[illegible]	[illegible]	13 [illegible]	[illegible]	
14	1.[illegible]	+[illegible]	−4 1[illegible]	+[illegible]	+7	1[illegible]	[illegible]	+[illegible]	+1[illegible]		[illegible]
[illegible]	[illegible]	[illegible]	3 [illegible]	4[illegible]	7	[illegible]	1 [illegible]	[illegible]	1[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	3 [illegible]	[illegible]	7	[illegible]	1 [illegible]	[illegible]	14 [illegible]	[illegible]	[illegible]
Apr 4	[illegible]	[illegible]	2 [illegible]	44	7	Nov [illegible]	1 [illegible]	[illegible]	14 [illegible]	[illegible]	
11	[illegible]	[illegible]	2 [illegible]	4[illegible]	6	1[illegible]	1 [illegible]	[illegible]	14 [illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	1 [illegible]	[illegible]	6	1[illegible]	1 [illegible]	[illegible]	14 [illegible]	[illegible]	[illegible]
[illegible]	[illegible]	+[illegible]	−1 [illegible]	+[illegible]	+6	[illegible]	1.127	+[illegible]	+14 [illegible]		[illegible]
May [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6	Dec [illegible]	1.1[illegible]	[illegible]	14 [illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.1[illegible]	[illegible]	1[illegible]	[illegible]	
1[illegible]	[illegible]	[illegible]	+[illegible]	[illegible]	[illegible]	16	1.1[illegible]	[illegible]	1[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	1 [illegible]	[illegible]	[illegible]	[illegible]	1.[illegible]	[illegible]	1[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	+[illegible]	+[illegible]	+[illegible]	+[illegible]	[illegible]	1.2[illegible]	+[illegible]	+15	[illegible]	[illegible]

SATELLITE III.

Date, 1871.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.				Date. 1871.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
	Factor for x′.	Factor for y′.	p.	x.		y.			Factor for x′.	Factor for y′.	p.	x.		y.	
				D.	R.	D.	R.					D.	R.	D.	R.
			° ′	″	″	″	″				° ′	″	″	″	″
Jan. 1	1.246	+0.893	−4 30.6		+41		+15	Aug. 4	0.856	+0.413	+ 8 9.6	−33		+7	
8	1.230	0.875	4 52.2	+18	49	+15	15	11	0.863	0.406	8 49.6	37		7	
15	1.211	0.855	5 10.0	25	55	15	15	18	0.872	0.399	9 28.0	41	-15	7	+7
22	1.190	0.833	5 23.9	31	61	14	14	26	0.882	0.392	10 4.6	45	19	7	7
29	1.166	0.810	5 33.2	36	65	14	14	Sept. 2	0.894	0.386	10 39.1	49	22	7	7
Feb. 6	1.141	+0.785	−5 38.0	+39	+67	+14	+14	9	0.907	+0.380	+11 11.4	−53	-25	+7	+7
13	1.115	0.761	5 38.0	41	69	13	13	16	0.922	0.375	11 41.3	56	28	6	6
20	1.089	0.737	5 33.4	42	70	13	13	23	0.938	0.371	12 8.5	60	31	6	6
27	1.064	0.713	5 24.2	42	70	12	12	30	0.956	0.367	12 32.9	63	33	6	6
Mar. 6	1.040	0.691	5 10.6	42	69	12	12	Oct. 8	0.975	0.363	12 54.4	66	35	6	6
13	1.016	+0.669	−4 52.9	+41	+68	+11	+11	15	0.996	+0.360	+13 12.6	−68	-37	+6	+6
21	0.994	0.649	4 31.4	39	66	11	11	22	1.018	0.358	13 27.4	70	38	6	6
28	0.973	0.629	4 6.3	37	63	11	11	29	1.040	0.357	13 38.7	71	38	6	6
Apr. 4	0.954	0.611	3 37.9	34	60	10	10	Nov. 5	1.063	0.356	13 46.5	71	37	6	6
11	0.936	0.593	3 6.6	31	57	10	10	12	1.086	0.356	13 50.3	70	36	6	6
18	0.920	0.577	2 32.6	28	53	10	10	20	1.109	0.357	13 50.3	69	34	6	6
25	0.905	+0.561	−1 56.2	+25	+49	+10	+10	27	1.132	+0.360	+13 46.3	−66	-30	+6	+6
May 3	0.892	0.547	1 17.7	21	45	9	9	Dec. 4	1.154	0.364	13 38.4	62	-25	6	+6
10	0.880	0.533	−0 37.4	+17	41	+ 9	9	11	1.174	0.368	13 26.9	58		6	
17	0.871	0.521	+0 4.4		37		9	18	1.191	0.372	13 8.7	52		6	
24	0.863	0.509	0 47.5		33		9	25	1.205	+0.376	+12 53.7	−44		+6	
31	0.855	+0.498	+1 31.6		+29		+ 9								

SATELLITE IV.

Date. 1871.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.				Date, 1871.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
	Factor for x′.	Factor for y′.	p.	x.		y.			Factor for x′.	Factor for y′.	p.	x.		y.	
				D.	R.	D.	R.					D.	R.	D.	R.
			° ′	″	″	″	″				° ′	″	″	″	″
Apr. 30	0.895	+0.444	− 1 36.1	+57	+64	+15	+15	Oct. 16	0.999	+0.293	+13 3.2	−106	−82	+10	+10
May 17	0.870	0.419	− 0 1.0	+38	+49	14	14	Nov. 2	1.051	0.290	13 30.9	109	83	10	10
Aug. 10	0.862	0.331	+ 8 30.4	−50	−33	11	11	18	1.106	0.290	13 38.5	107	77	10	10
26	0.884	0.318	9 58.1	67	48	11	11	Dec. 5	1.158	0.294	13 24.9	92	60	10	10
Sept. 12	0.914	0.308	11 14.4	83	62	11	11	22	1.199	+0.300	+12 51.6	− 68	−34	+10	+10
29	0.953	+0.299	+12 16.9	−96	−73	+10	+10								

THE APPARENT ELEMENTS OF SATURN'S RING.

Washington Mean Noon.		*a* Outer Major Axis.	*b* Outer Minor Axis.	*p* Inclination of Northern Semi-minor Axis of Ring reckoned from North to East.	*l* The Elevation of the Earth above the Plane of the Ring.	*l′* The Elevation of the Sun above the Plane of the Ring.	*u* Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on Equator.	*u′* Ecliptic.
Jan.	0	34.03	15.14	6 30.0	+26 25.4	+26 28.8	[illegible]	[illegible]
	20	34.53	15.11	6 44.1	26 7.1	26 21.7	[illegible]	[illegible]
Feb.	9	34.94	15.21	6 52.3	25 48.1	26 20.4	[illegible]	[illegible]
March	1	35.51	15.43	6 58.4	25 30.5	26 17.0	[illegible]	[illegible]
	21	[illegible]	15.78	7 2.4	25 17.0	26 13.4	[illegible]	[illegible]
April	10	38.20	16.24	7 4.3	25 10.0	26 9.6	[illegible]	[illegible]
	30	39.15	16.78	7 4.1	25 10.6	26 5.6	[illegible]	[illegible]
May	20	40.34	17.33	7 2.0	25 18.6	26 1.4	[illegible]	[illegible]
June	9	[illegible]	17.80	6 58.1	25 32.2	25 57.0	[illegible]	[illegible]
	29	41.51	18.08	6 53.0	25 48.6	25 52.5	[illegible]	[illegible]
July	19	41.24	18.13	6 47.6	26 4.5	25 47.8	[illegible]	[illegible]
Aug.	8	40.47	17.92	6 41.1	26 17.1	25 42.9	[illegible]	[illegible]
	28	39.67	17.52	6 40.6	26 25.2	25 37.8	[illegible]	[illegible]
Sept.	17	38.12	16.99	6 40.7	26 28.0	25 32.5	[illegible]	[illegible]
Oct.	7	36.87	16.40	6 41.6	26 25.1	25 27.1	[illegible]	[illegible]
	27	35.78	15.84	6 48.8	26 16.1	25 21.5	[illegible]	[illegible]
Nov.	16	34.92	15.32	6 55.5	26 1.1	25 15.7	[illegible]	[illegible]
Dec.	6	34.12	14.87	7 2.0	25 40.2	25 9.7	[illegible]	[illegible]
	16	[illegible]	14.52	7 10.0	25 14.1	25 3.6	[illegible]	[illegible]
	31	[illegible]	14.44	7 11.7	+25 7.2	+25 2.0	[illegible]	[illegible]

Factor which has to be multiplied by *a* and *b* to obtain the axes of

The inner ellipse of the outer Ring = 0.8801 Log Factor = 9.9445

The outer ellipse of the inner Ring = 0.8599 " = 9.9344

The inner ellipse of the inner Ring = 0.6650 " = 9.[illegible]

The inner ellipse of Bond's dusky Ring = 0.5498 " = 9.7[illegible]

N. B. The sign of *l* indicates whether the visible surface of the Ring is northern or southern.

THE APPARENT DISCS OF VENUS AND MARS.

The Versed Signs of their Illuminated Portions, divided by their Apparent Diameters.

Date.		Venus.	Mars.	Date.		Venus.	Mars.
January	1	[illegible]	[illegible]	July	30	[illegible]	[illegible]
January	31	[illegible]	[illegible]	August	29	[illegible]	[illegible]
March	2	[illegible]	[illegible]	September	28	[illegible]	[illegible]
April	1	[illegible]	[illegible]	October	28	[illegible]	[illegible]
May	1	[illegible]	[illegible]	November	27	[illegible]	[illegible]
May	31	[illegible]	[illegible]	December	27	[illegible]	[illegible]
June	30	[illegible]	[illegible]				

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m		°	′
Jan.	1	5	30	☿ greatest elong. E.	19	24
	1	18	22	☉ in Perigee.		
	3	21	35	☌ ♃ ☾ ..... ♃ +	1	31
	5	21	26	☿ in ☊		
	6	–	–	☾ eclipsed, vis. at Wash.		
	6	20	43	☌ ♅ ☾ ..... ♅ –	0	49
	7	23	24	☿ stationary.		
	8	23	50	□ ♆ ☉		
	10	9	27	♀ in Aphelion.		
	10	11	19	☿ in Perihelion.		
	12	2	3	☌ ♂ ☾ ..... ♂ –	2	39
	12	22	59	☌ ☿ ♀ ..... ☿ +	3	29
	14	9	10	☍ ♅ ☉		
	17	8	12	☌ ☿ ☉ Inf.		
	18	11	11	☌ ♄ ☾ ..... ♄ +	0	16
	19	19	37	☌ ☿ ☾ ..... ☿ +	4	48
	20	4	0	♄ in Aphelion.		
	20	13	47	♂ in Aphelion.		
	20	18	52	☿ greatest Hel. Lat. N.		
	21	2	8	☌ ♀ ☾ ..... ♀ +	1	25
	26	3	27	☌ ♆ ☾ ..... ♆ +	3	48
	28	18	4	☿ stationary.		
	31	1	19	☌ ♃ ☾ ..... ♃ +	1	44
Feb.	2	2	39	♀ greatest Hel. Lat. S.		
	3	2	20	☌ ♅ ☾ ..... ♅ –	0	43
	8	15	10	☌ ♂ ☾ ..... ♂ –	1	55
	9	1	48	♂ stationary.		
	9	16	15	♃ stationary.		
	10	10	34	☿ greatest elong. W.	26	1
	13	6	35	☿ in ☋		
	14	23	33	☌ ♄ ☾ ..... ♄ +	0	36
	16	20	12	☌ ☿ ☾ ..... ☿ +	1	36
	20	4	32	☌ ♀ ☾ ..... ♀ +	3	44
	22	13	37	☌ ♆ ☾ ..... ♆ +	3	38
	23	10	56	☿ in Aphelion.		
	27	10	25	☌ ♃ ☾ ..... ♃ +	1	36
Mar.	2	9	32	☌ ♅ ☾ ..... ♅ –	0	46
	7	14	59	☌ ♂ ☾ ..... ♂ –	1	27
	7	19	20	□ ♃ ☉		
	14	8	36	☌ ♄ ☾ ..... ♄ +	0	59
	15	20	53	☿ greatest Hel. Lat. S.		
	17	13	11	☌ ♆ ♀ ..... ♆ –	1	9
	19	10	50	☍ ♂ ☉		
	19	16	33	☌ ☿ ☾ ..... ☿ +	3	7
	20	8	12	☉ enters ♈, spring com.		
	21	23	44	☌ ♆ ☾ ..... ♆ +	3	29
	22	11	17	☌ ♀ ☾ ..... ♀ +	4	40
	26	23	58	☌ ♃ ☾ ..... ♃ +	1	10
	27	19	2	☌ ☿ ☉ Sup.		
	29	17	39	☌ ♅ ☾ ..... ♅ –	0	59
	30	0	47	□ ♄ ☉		
	30	9	44	♀ in ☊		
Mar.	30	10	0	♅ stationary.		
April	3	7	48	☌ ♂ ☾ ..... ♂ –	1	58
	3	20	11	☌ ♆ ☿ ..... ♆ –	1	45
	3	20	42	☿ in ☊		
	8	10	32	☿ in Perihelion.		
	10	15	47	☌ ♄ ☾ ..... ♄ +	1	20
	11	3	31	☌ ♆ ☉		
	12	5	0	□ ♅ ☉		
	18	8	44	☌ ♆ ☾ ..... ♆ +	3	26
	18	14	32	♄ stationary.		
	18	18	6	☿ greatest Hel. Lat. N.		
	20	17	29	☌ ☿ ☾ ..... ☿ +	6	21
	21	22	12	☌ ♀ ☾ ..... ♀ +	3	38
	22	21	33	☿ greatest elong. E.	20	21
	23	16	14	☌ ♃ ☾ ..... ♃ +	0	37
	26	1	56	☌ ♅ ☾ ..... ♅ –	1	17
	30	9	16	☌ ♂ ☾ ..... ♂ –	3	17
May	1	7	21	♂ stationary.		
	2	17	28	♀ in Perihelion.		
	4	3	46	☿ stationary.		
	7	22	52	☌ ♄ ☾ ..... ♄ +	1	31
	11	17	51	☌ ♀ ♃ ..... ♀ +	1	58
	12	5	50	☿ in ☋		
	14	20	2	☌ ☿ ☉ Inf.		
	15	16	31	☌ ♆ ☾ ..... ♆ +	3	28
	18	5	18	☌ ☿ ☾ ..... ☿ +	1	38
	21	9	52	☌ ♃ ☾ ..... ♃ +	0	3
	22	7	1	☌ ♀ ☾ ..... ♀ +	1	19
	22	10	12	☿ in Aphelion.		
	23	10	8	☌ ♅ ☾ ..... ♅ –	1	31
	24	21	36	♀ greatest Hel. Lat. N.		
	27	1	26	☿ stationary.		
	28	0	41	☌ ♂ ☾ ..... ♂ –	4	39
June	3	12	40	☌ ♅ ♀ ..... ♅ –	1	46
	4	6	32	☌ ♄ ☾ ..... ♄ +	1	28
	10	0	32	☿ greatest elong. W.	23	34
	11	20	10	☿ greatest Hel. Lat. S.		
	11	23	49	☌ ♆ ☾ ..... ♆ +	3	30
	15	7	35	☌ ☿ ☾ ..... ☿ –	0	20
	17	–	–	☉ Eclipsed, invis. at Wash.		
	18	4	12	☌ ♃ ☾ ..... ♃ –	0	29
	19	18	37	☌ ♅ ☾ ..... ♅ –	1	42
	21	4	34	☉ enters ♋, summer com.		
	21	6	51	☌ ♀ ☾ ..... ♀ –	1	43
	25	2	1	☌ ♂ ☾ ..... ♂ –	5	36
	25	19	37	□ ♂ ☉		
	28	2	32	☍ ♄ ☉		
	29	23	20	☌ ♃ ☉		
	30	19	55	☿ in ☊		
July	1	14	16	☌ ♄ ☾ ..... ♄ +	1	16
	1	–	–	☾ Eclipsed, invis. at Wash.		
	2	11	44	♂ in ☋		

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m		°	′
July	2	15	9	☉ in Apogee.		
	5	9	49	☿ in Perihelion.		
	6	16	12	☌ ☿ ♃ ..... ☿ +	0	59
	8	7	19	♃ in ☊		
	9	7	27	☌ ♆ ☾ ..... ♆ +	3	27
	10	18	48	☌ ☿ ☉ Sup.		
	14	9	1	☌ ♅ ☿ ..... ♅ —	1	14
	15	17	21	☿ greatest Hel. Lat. N.		
	15	22	57	☌ ♃ ☾ ..... ♃ —	1	0
	16	10	30	□ ♆ ☉		
	17	3	47	☌ ♅ ☾ ..... ♅ —	1	48
	17	16	36	☌ ☿ ☾ ..... ☿ —	0	58
	17	21	35	♀ greatest elong. E.	45	35
	19	8	26	☌ ♅ ☉		
	19	22	58	♀ in ☋		
	20	18	44	☌ ♀ ☾ ..... ♀ —	5	27
	23	9	37	☌ ♂ ☾ ..... ♂ —	5	51
	28	6	24	♆ stationary.		
	28	21	13	☌ ♄ ☾ ..... ♄ +	1	4
Aug.	5	15	42	☌ ♆ ☾ ..... ♆ +	3	17
	8	5	8	☿ in ☋		
	12	17	50	☌ ♃ ☾ ..... ♃ —	1	32
	13	13	55	☌ ♅ ☾ ..... ♅ —	1	57
	17	14	23	☌ ☿ ☾ ..... ☿ —	7	4
	18	9	27	☿ in Aphelion.		
	18	13	26	☌ ♀ ☾ ..... ♀ —	9	54
	20	–	–	♀ at greatest brilliancy.		
	20	5	46	☿ greatest elong. E.	27	23
	20	21	37	☌ ♂ ☾ ..... ♂ —	5	16
	23	3	53	♀ in Aphelion.		
	25	3	5	☌ ♄ ☾ ..... ♄ +	1	3
Sept.	2	0	6	☌ ♆ ☾ ..... ♆ +	3	4
	2	17	5	♀ stationary.		
	3	9	1	☿ stationary.		
	6	22	52	♄ stationary.		
	7	19	24	☿ greatest Hel. Lat. S.		
	9	12	5	☌ ♃ ☾ ..... ♃ —	2	6
	10	0	38	☌ ♅ ☾ ..... ♅ —	2	11
	14	5	41	☌ ☿ ☾ ..... ☿ —	9	30
	14	22	17	☌ ♀ ☾ ..... ♀ —	14	27
	14	23	40	♀ greatest Hel. Lat. S.		
	17	1	7	☌ ☿ ☉ Inf.		
	18	13	0	☌ ♂ ☾ ..... ♂ —	3	54
	21	8	51	☌ ♄ ☾ ..... ♄ +	1	14
	22	18	48	☉ enters ♎, autumn com.		
	25	9	55	☿ stationary.		
	25	18	1	☌ ♀ ☉ Inf.		
	26	10	34	□ ♄ ☉		
	26	19	12	☿ in ☊		
	29	7	45	☌ ♆ ☾ ..... ♆ +	2	56
Oct.	1	9	4	☿ in Perihelion.		
	2	17	24	☿ greatest elong. W.	17	56
Oct.	4	15	12	☌ ☿ ♀ ..... ☿ +	9	41
	7	4	19	☌ ♃ ☾ ..... ♃ —	2	36
	7	11	0	☌ ♅ ☾ ..... ♅ —	2	29
	11	9	51	☌ ♀ ☾ ..... ♀ —	11	54
	11	16	34	☿ greatest Hel. Lat. N.		
	12	9	18	☌ ☿ ☾ ..... ☿ —	3	17
	14	11	0	♀ stationary.		
	15	18	8	☍ ♆ ☉		
	17	6	58	☌ ♂ ☾ ..... ♂ —	2	2
	18	16	26	☌ ♄ ☾ ..... ♄ +	1	31
	22	0	35	□ ♃ ☉		
	24	6	31	□ ♅ ☉		
	26	13	53	☌ ♆ ☾ ..... ♆ +	2	58
Nov.	1	–	–	♀ at greatest brilliancy.		
	1	18	18	☌ ☿ ☉ Sup.		
	3	16	36	☌ ♃ ☾ ..... ♃ —	2	56
	3	19	45	☌ ♅ ☾ ..... ♅ —	2	44
	4	4	25	☿ in ☋		
	6	10	0	♅ stationary.		
	8	14	14	☌ ♀ ☾ ..... ♀ —	5	50
	10	2	41	♀ in ☊		
	12	9	27	☌ ☿ ☾ ..... ☿ —	3	18
	14	8	42	☿ in Aphelion.		
	15	2	47	☌ ♂ ☾ ..... ♂	0	0
	15	3	35	☌ ♄ ☾ ..... ♄ +	1	49
	15	20	38	☌ ♂ ♄ ..... ♂ —	1	46
	16	9	58	♃ stationary.		
	22	18	39	☌ ♆ ☾ ..... ♆ +	3	5
	30	23	22	☌ ♃ ☾ ..... ♃ —	2	57
Dec.	1	2	11	☌ ♅ ☾ ..... ♅ —	2	48
	4	18	40	☿ greatest Hel. Lat. S.		
	6	3	31	♂ greatest Hel. Lat. S.		
	6	11	18	♀ greatest elong. W.	46	51
	8	0	14	☌ ♀ ☾ ..... ♀ —	1	51
	11	–	–	☉ Eclipsed, invis. at Wash.		
	11	10	45	☌ ☿ ♄ ..... ☿ —	2	36
	12	18	23	☌ ♄ ☾ ..... ♄ +	2	4
	12	20	53	☌ ☿ ☾ ..... ☿ —	0	16
	13	14	33	♀ in Perihelion.		
	13	23	58	☌ ♂ ☾ ..... ♂ +	1	57
	15	8	31	☿ greatest elong. E.	20	22
	19	23	32	☌ ♆ ☾ ..... ♆ +	3	10
	21	12	51	☉ enters ♑, winter com.		
	23	1	34	☿ stationary.		
	23	18	29	☿ in ☊		
	28	0	58	☌ ♃ ☾ ..... ♃ —	2	41
	28	6	43	☌ ♅ ☾ ..... ♅ —	2	43
	28	8	20	☿ in Perihelion.		
	29	22	10	♂ in Perihelion.		
	31	0	18	☉ in Perigee.		
	31	16	23	☌ ☿ ♄ ..... ☿ +	2	4
	32	18	3	☌ ☿ ☉ Inf.		

LATITUDES AND LONGITUDES OF THE PRINCIPAL OBSERVATORIES.

Åbo . . . . . N. Lat. 60° 26′ 56″.8 ± 0″.11. Argelander, *Obs. Astron.*, I. p. xxi.
Long. E. from Paris, 1^{h} 19^{m} $47^{s}.3$. Argelander, *Astr. Nachr.*, IX. 264.

Albany, (Dome) . N. Lat. 42° 39′ 49″.5. *Report Regents Univ., N. Y.*, p. 59.
Long. E. from New York, 0^{h} 0^{m} $57^{s}.40$ ± $0^{s}.01$. Gould, *Coast Survey Report*, 1861, p. 232.

Altona . . . . N. Lat. 53° 32′ 45″.27. Gauss, *Bestimmung des Breitenunterschiedes*, &c., p. 71.
Long. E. from Greenwich, 0^{h} 39^{m} $46^{s}.15$ ± $0^{s}.04$. Struve, *Exped. Chronom.*, 1844, p. 206.

Ann Arbor . . N. Lat. 42° 16′ 48″. Brünnow, *Astron. Journal*, V. 112.
Long. W. from Cambridge, 0^{h} 50^{m} $24^{s}.21$ ± $0^{s}.05$. Brünnow, *Astr. Notices*, 27.

Armagh . . . N. Lat. 54° 21′ 12″.70. Robinson, *Places of Stars*, &c., p. x.
Long. W. from Greenwich, 0^{h} 26^{m} $35^{s}.47$. *Ibid.*, p. xi.

Athens, (Mer. Cir.) N. Lat. 37° 58′ 20″ ± 1″. Bouris, *Astr. Nachr.*, XXXIII. 197.
Long. E. from Hamburg, 0^{h} 55^{m} $1^{s}.63$. Bouris, *Erg. Heft z. d. Astr. Nachr.*, p. 150.

Berlin, (Dome) . N. Lat. 52° 30′ 16″.68 ± 0″.2. Encke, *Astr. Nachr.*, XXIII. 372.
Long. E. from Brussels, 0^{h} 36^{m} $6^{s}.48$ ± $0^{s}.1$. Encke, *Abhandl. der Berliner Akad. d. Wissenschaften*, 1858, p. 80.

Bilk . . . . N. Lat. 51° 12′ 25″. Brünnow, *Astr. Nachr.*, XXVII. 300.
Long. W. from Berlin, 0^{h} 26^{m} 30^{s}. *Ibid.*

Bonn . . . . N. Lat. 50° 43′ 45″.0.
Long. E. from Paris, 0^{h} 19^{m} $3^{s}.0$.
} Argelander, *Ast. Jour.*, III. 18.

The provisional Observatory on the "*Alter Zoll*," in which were made the observations published in Vol. I. of the Bonn series, was situated

N. Lat. 50° 44′ 9″.
Long. E. from Paris, 0^{h} 19^{m} $5^{s}.5$.
} *Bonner Astr. Beobb.*, I. p. i.

Breslau . . . N. Lat. 51° 6′ 56″.5. Galle, *Berliner Astr. Jahrbuch*, 1866, p. 286.
Long. E. from Paris, 0^{h} 58^{m} $48^{s}.85$. Sadebeck, (geodetic from Russia.) Galle, *Astr. Nachr.*, LV. 195.
Long. E. from Berlin, 0^{h} 14^{m} $34^{s}.37$. Klinger, (from occultations.) *Ibid.*

These give, referred to Greenwich :—

	h	m	s
The former, by the old longitude of Paris,	1	8	9.71
The latter, " new " " Berlin,			9.85
Whence we may adopt	1	8	9.8

Brussels . . . N. Lat. 50° 51′ 10″.7. Quetelet, *Annales de l'Obs. de. Bruxelles*, 1837, p. 264.

Long. E. from Greenwich, $0^h\ 17^m\ 28^s.9$. Airy, *Mem. R. Astr. Soc.*, XXIV. 26.

Cambridge, (Eng.) N. Lat. 52° 12′ 51″.76. *Camb. Phil. Trans.*, V. 279.

Long. E. from Greenwich, $0^h\ 0^m\ 22^s.69$. Challis, *Monthly Not. R. Astr. Soc.*, XIV. 195.

Cambridge, (Mass.) N. Lat. 42° 22′ 48″.60. Peirce, *Mem. Amer. Acad. N. S.*, II. 203.

Red'n to Dome, —0″.5. Bond, *Annals Harv. Coll. Obs.*, I. xvii.

Long. E. from New York, $0^h\ 11^m\ 26^s.07$. Walker, *Astr. Jour.*, III. 18.

Cape of Good Hope. S. Lat. 33° 56′ 3″.2. Maclear, *Mem. R. Astr. Soc.*, XXXIII. p. 2.

	h	m	s		
Long. E. from Greenwich,	1	13	56.1	*Ibid.*,	p. 126.
" E. " Cambridge,	1	13	31.5	"	p. 127.
" W. " Åbo,	0	15	10.2	"	p. 128.
" E. " Edinburgh,	1	26	37.2	"	p. 129.
" W. " Madras,	4	7	1.56	" xii.	p. 137.

These give, referred to Greenwich by the longitudes of this table—

		h	m	s
By Greenwich occultations,		1	13	56.1
By Cambridge	"			54.46
By Åbo	"			57.73
By Edinburgh	"			54.15
By Madras	"			55.62

Whence we may adopt 1 13 55.7, giving the first a double weight.

Chicago . . . N. Lat. 41° 50′ 1″.
Long. W. from Ann Arbor, $0^h\ 15^m\ 31^s.59$. } Safford, from *Report of Lake Survey*.

Christiania . . N. Lat. 59° 54′ 43″.7. Hansteen, *Astr. Journal*, II. 173.

Long. W. from Copenhagen, $0^h\ 7^m\ 25^s.0$. Hansteen, *Astr. Nachr.*, XXXII. 301.

Clinton . . . N. Lat. 43° 3′ 16″.5. *Report of Regents of Univ. N. Y.*, p. 59.

Long. W. from Cambridge, $0^h\ 17^m\ 6^s.46$. Peters, *Ibid.*, p. 32.

Copenhagen . . (New Observatory.)

N. Lat. 55° 41′ 13″.6 ± 0″.15. Thiele, *Astr. Nachr.*, LVI. 356.

Long. E. from Altona, $0^h\ 10^m\ 32^s.51$. Peters, *Mss. communication.*

The old Observatory, or Round Tower, is situated—

N. Lat. 52° 40′ 53″.0. Schumacher, *Astr. Nachr.*, V. 366.

Long. E. from Holkens Bastion, $0^s.57$. Wurm, *Astr. Nachr.*, III. 438, V. 337.

Holkens Bastion was occupied as the Observatory for many years previous to the erection of the new building in 1861. *Astr. Nachr.*, XIX. 119.

Long. E. from Altona, $0^h\ 10^m\ 32^s.585$. Hansen, *Astr. Nachr.*, VIII. 281.
32.565. Schumacher, *Ast. Nachr.*, IX. 163.

Mean by weights, $0\ 10\ 32.583$.

Cracow . . . . N. Lat. 50° 3′ 50″.0 ± 0″.09. Weisse, *Astr. Nachr.*, XVI. 256.
Long. E. from Paris, $1^h\ 10^m\ 29^s.78$. *Astr. Journal*, III. 19.

Dorpat . . . . N. Lat. 58° 22′ 47″.05. Struve, *Obs. Astron.*, VI. p. lx.
Long. E. from Paris, $1^h\ 37^m\ 33^s.0$. Struve, *Vermessung Livlands*, p. 35, *Mem. Acad. Scie.*, Vol. IV.

Dublin . . . . N. Lat. 53° 23′ 13″.0.
Long. W. from Greenwich, $0^h\ 25^m\ 22^s$. } *Astr. Nachr.*, X. 274.

Durham . . . N. Lat. 54° 46′ 6″.4. *Astr. Nachr.*, XXVI. 215.
Long. W. from Greenwich, $0^h\ 6^m\ 19^s.75$. *Monthly Not. R. Astr. Soc.*, XII. 35.

Edinburgh . . N. Lat. 55° 57′ 23″.2. *Edinb. Observations*, XII. p. v.
Long. W. from Greenwich, $0^h\ 12^m\ 43^s.05$. Airy, *Monthly Not. R. Astr. Soc.*, XVIII. 254.

Florence . . . (Observatory of the College.)
N. Lat. 43° 46′ 40″.8. Zach, *Corresp. Astron.*, I. 15.
Long. E. from Paris, $0^h\ 35^m\ 42^s.1$. *Ibid.*, p. 14.
The *Specola del Museo Reale* is situated, according to the same authority,
N. Lat. 43° 46′ 4″.3, p. 11.
Long. E. from Paris, $0^h\ 35^m\ 40^s.2$, p. 14.

Geneva . . . . N. Lat. 46° 11′ 58″.84. Plantamour, *Mém. Soc. de Phys. et d'Hist. Nat.*, XI. 15.
Long. E. from Paris, $0^h\ 15^m\ 16^s.22$. *Astr. Nachr.*, XX. 7.

Georgetown . . Lat. 0′ 47″.42 North } of Naval Obs. dome. Curley, *Astr. Journal*,
(Dome.) Long. $0^m\ 6^s.20$ West } I. 69, 70.

Göttingen . . . N. Lat. 51° 31′ 47″.85. Gauss, *Bestimmung des Breitenunterschiedes*,
(Mer. Circle.) &c., p. 71.
Long. W. from Altona, $0^m\ 0^s.049$. *Ibid.*
For the old Observatory,
N. Lat. 51° 31′ 55″.6. *Monatl. Corresp.*, XXVII. 483.
Long. E. from Paris, $0^h\ 30^m\ 25^s.2$. *Astr. Nachr.*, II. 407–8.

Gotha . . . . (New Observatory.)
N. Lat. 50° 56′ 37″.46. Hansen, *Abhandl. d. k. Sächs. Gesellschaft*, VIII. 242.
Long. W. from Leipsic, $0^h\ 6^m\ 43^s.485 \pm 0^s.016$. *Ibid.*, p. 320.
For the old Observatory on the Seeberg,
N. Lat. 50° 56′ 5″.19. Gauss, *Bestimmung des Breitenunterschiedes*, &c., p. 80.
Long. E. from new Observatory, $0^m\ 4^s.60$. Hansen, *Abhandl. d. Sächs. Ges.*, VIII. 241.

Greenwich . . . N. Lat. 51° 28′ 38″.2. *Greenwich Observations*, 1864, p. lxii.

	h	m	s	
Long. E. from Foilhommerum,	0	41	33.29	Airy.
Foilhommerum E. from Heart s Content,	2	51	56.54	Gould.
Heart's Content E. from Calais,	0	55	37.72	"
Calais E. from Bangor,	0	6	0.31	"
Bangor E. from Cambridge,	0	9	22.99	Walker.
Long. E. from Cambridge,	4	44	30.85	
Cambridge E. from New York,	0	11	26.07	Walker, *Astr. Jour.*, III. 18.
New York E. from Washington,	0	12	15.47	
Long. E. from Washington,	5	8	12.39	Gould, *Report to Coast Survey on Trans-Atlantic Longitude.*

Hamburg . . . N. Lat. 53° 33′ 7″. Rümker, *Mittlere Oerter*, &c., p. ii.
Long. E. from Altona, 0^h 0^m 7^s.41. Hansen, *Astr. Nachr.*, VIII. 277.

Helsingfors . . N. Lat. 60° 9′ 42″.6. Argelander, *Astr. Nachr.*, XIV. 205.
Long. E. from Paris, 1^h 30^m 28.^{s}3. Struve, *Table des Positions Geogr. en Russie*, p. 12.

Hudson. . . . N. Lat. 41° 14′ 42″.6. Loomis, *Trans. Amer. Phil. Soc. N. S.*, X. 61.
Long. W. from Washington, 0^h 17^m 32^s.06. *Astr. Journal*, III. 20.

Kasan . . . . N. Lat. 55° 47′ 24″.17. Kowalski, *Astr. Nachr.*, LIV. 117.
Long. E. from Pulkowa, 1^h 15^m 10^s.08. Struve, *Exped. Chron.*, 1850.

Königsberg . . N. Lat. 54° 42′ 50″.56. Luther, *Astr. Nachr.*, XLV. 314.
Long. E. from Berlin, 0^h 28^m 24^s.1. Encke, *Abh. d. k. Akad. Urnersch. Berlin*, 1858, p. 99.

Kremsmünster . N. Lat. 48° 3′ 23″.69 ± 0″.28. Reslhüber, *Astr. Nachr.*, XXXVII. 269.
Long. W. from Vienna, 0^h 8^m 59^s.064 ± 0^s.03. *Ibid.*

Leipsic . . . . (New Observatory.)
N. Lat. 51° 20′ 6″.3. Bruhns, *Astr. Nachr.*, LXVII. 264.
Long. W. from Berlin, 0^h 4^m 0^s.895 ± 0^s.02. Bruhns and Förster, *Bestimmung der Langendifferenz*, &c.
The Pleissenburg is situated—
N. Lat. 51° 20′ 20″.5. D'Arrest, *Astr. Nachr.*, XXIX. 280.
Long. W. from Berlin, 0^h 4^m 5^s.27. *Ibid.*
Bruhns found by geodetic measurement a difference of 10″.74 in latitude and 4^s.00 in longitude between the two observatories.
Geschichte u. Beschreibung d. Leipziger Sternwarte, p. 19.

Leyden . . . . (New Observatory.)
N. Lat. 52° 9′ 20″.3.
Long. E. from Greenwich, 17^m 56^s.18. } Kaiser, *Astr. Nachr.*, LX. 284.
(Old Observatory,)
N. Lat. 52° 9′ 27″.4.
Long. E. from Greenwich, 17^m 56^s.80. } *Idem.*

Liverpool . . . (Old Observatory.)
N. Lat. 53° 24′ 47″.72. Hartnup, *M. Notices R. Astr. Soc.*, XIII, 247.
Long. W. from Greenwich, 0^h 12^m 0^s.05. Airy, *Mem. R. Astr. Soc.*, XVI. 275.

	(New Observatory,) N. Lat. 53° 24′ 3″.8. *M. Notices R. Astr. Soc.*, XXVIII. 81. Long. W. from Greenwich, $0^{h}\ 12^{m}\ 17^{s}.15$. *Ibid.*, p. 82.
Madras	N. Lat. 13° 4′ 9″.2. TAYLOR, *Madras Gen. Catal.*, Pref., p. ii. Long. E. from Greenwich, $5^{h}\ 20^{m}\ 57^{s}.28$. TAYLOR, *Mem. R. Astr. Soc.*, XVI. 5.
Mannheim . .	N. Lat. 49° 29′ 12″.9. *Astr. Nachr.*, XII., 129. Long. E. from Paris, $0^{h}\ 24^{m}\ 30^{s}.04$. *Astr. Journal*, III. 21.
Markree . . .	N. Lat. 54° 10′ 31″.77. *Astr. Journal*, II. 12. Long. W. from Greenwich, $0^{h}\ 33^{m}\ 48^{s}.4$. *Naut. Alm.*, 1855, p. 594.
Marseilles . . .	N. Lat. 43° 17′ 49″. *Monatl. Corresp.* XIII. 139. Long. E. from Paris, $0^{h}\ 12^{m}\ 7^{s}.53$. *Astr. Journal*, III. 21.
Milan	(Brera.) N. Lat. 45° 28′ 0″.7. ZACH, *Corresp. Astron.*, V. 300. Long. E. from Paris, $0^{h}\ 27^{m}\ 25''.18$. *Astr. Journal*, III. 21.
Modena . . .	N. Lat. 44° 38′ 52″.75. BIANCHI, *Atti del Real Osservatorio di Modena*, I. 336. Long. E. from Paris, $0^{h}\ 34^{m}\ 22^{s}.51$. *Astr. Journal*, III. 21.
Moscow . .	N. Lat. 55° 45′ 19″.83 ± 0″.08. SCHWEIZER, *Astr. Nachr.*, XXXVIII. 100. Long. E. from Pulkowa, $0^{h}\ 28^{m}\ 58^{s}.23 \pm 0^{s}.03$. STRUVE, *Exped. Chron.*, 1845, p. 130.
Munich . . .	(Bogenhausen.) N. Lat. 48° 8′ 45″. SOLDNER, *Astr. Nachr.*, IX. 422. Long. E. from Paris, $0^{h}\ 37^{m}\ 4^{s}.98$. WURM, *Astr. Nachr.*, VIII. 148.
Naples	(Capodimonte.) N. Lat. 40° 51′ 46″.63. BRIOSCHI, *Astr. Nachr.*, V. 294. Long. E. from Paris, $0^{h}\ 47^{m}\ 37^{s}.93$. *Effem. di Milano*, 1867, p. 99.
New York . . .	(Mr. Rutherfurd's Observatory.) N. Lat. 40° 43′ 48″.53. U. S. Coast Survey. *Amer. Journal Science*, XXXIX. 304. Long. E. from Washington, $0^{h}\ 12^{m}\ 15^{s}.47$. *Astr. Journal*, III. 18.
Nicolajew . . .	N. Lat. 46° 58′ 20″.6. KNORRE, *Astr. Nachr.*, VII. 261. Long. E. from Pulkowa, $0^{h}\ 6^{m}\ 35^{s}.47$. STRUVE, *Exped. Chron de*, 1846, p. 46.
Olmütz	N. Lat. 49° 35′ 43″.0. SCHMIDT, *Astr. Nachr.*, XXXIX. 49. Long. E. from Kremsmünster, $0^{h}\ 12^{m}\ 30^{s}.40$. SCHMIDT, *Astr. Nachr.*, XLV. 46.
Oxford	N. Lat. 51° 45′ 35″.5. *Radcliffe Observ.*, 1864, pp. xxxvii, lxiii. Long. W. from Greenwich, $0^{h}\ 5^{m}\ 2^{s}.6$. *Ibid.*, p. xxxvi.
Padua	N. Lat. 45° 24′ 2″.5. SANTINI, *Astr. Nachr.*, XVII. 346. Long. E. from Paris, $0^{h}\ 38^{m}\ 8^{s}.15$. WOLFERS, *Berl. Astr. Jahrb.*, 1866, p. 292.

Palermo . . . N. Lat. 38° 6′ 44″. Cacciatore, *Annal. d. Wiener Sternwarte*, XXIV. 6.
Long. E. from Paris, $0^h\ 44^m\ 4^s.0$. Daussy, *Conn. des Temps.*, 1835, *addit.*, p. (8).

Paramatta . . S. Lat. 33° 48′ 49″.79. Rümker, *Phil. Trans.*, 1829, III. 16.
Long. E. from Greenwich, $10^h\ 4^m\ 6^s.25$. *Ibid.*, p. 29.

Paris . . . . N. Lat. 48° 50′ 13″.22 is generally adopted, as determined by Arago and Mathieu.
(Southern face.)

Langier, with Gambey circle,	48° 50′ 11″.19
Mauvais, " Fortin, "	11.85
5 observers, 1856–7, with Gambey circle,	11.80
6 " 1857–60 " " "	11.61
5 " 1860–1 " " "	11.71
Yvon Villarceau, " Rigaud, "	10.56

Yvon Villarceau, *Determinations Astr. en* 1863, p. 9.
Long. E. from Greenwich, $0^h\ 9^m\ 20^s.63$. Airy, *M. Not. R. Astr. Soc.*, XV. 124.

Philadelphia . . (Old High School Observatory.)
N. Lat. 39° 57′ 7″.5. Kendall. } *Astron. Journ.*,
Long. E. from Washington, $0^h\ 7^m\ 33^s.64$. Walker, } III. 22.

Prague . . . . N. Lat. 50° 5′ 18″.5. David, *Astr. Nachr.*, VIII. 198.
Long. E. from Paris, $0^h\ 48^m\ 20^s.50$. *Astr. Journal*, III. 22.

Pulkowa . . . N. Lat. 59° 46′ 18″.07. Struve, *Description de l'Observ. de Poulkova*, p. 290.
Long. E. from Altona, $1^h\ 21^m\ 32^s.523 \pm 0^s.039$. Struve, *Exped. Chronom. de* 1843, p. 144.

Rome . . . . (Collegio Romano.)
N. Lat. 41° 53′ 53″.72. Secchi, *Memorie del nuovo Osservatorio*, p. 123.
Long. E. from Greenwich, $0^h\ 49^m\ 56^s.14$. Rosa, *Astr. Nachr.*, LVI. 348.

San Fernando . N. Lat. 36° 27′ 45″. *Corresp. Astron.*, XIV. 240.
Long. W. from Paris, $0^h\ 34^m\ 10^s.6 \pm 0^s.31$. *Astr. Nachr.*, IX. 358.

Santiago . . . (New Observatory.)
S. Lat. 33° 26′ 42″.0. } Moesta, *Observ. Merid. relatives al planeta Marte*, p. xii.
Long. W. from Greenwich, $4^h\ 42^m\ 42^s.4$. }
For the original Observatory on Santa-Lucia—
S. Lat. 33° 26′ 25″.70. Moesta, *Observaciones Astronom.*, I. p. xxxvii.
Long. W. from Greenwich, $4^h\ 42^m\ 32^s.97$. *Ibid.*, xxxix.

Senftenberg . . N. Lat. 50° 5′ 10″.1. Brorsen, *Astr. Nachr.*, xxxi. 332
Long. E. from Greenwich, $1^h\ 5^m\ 50^s.60$. *Ibid.*

Speyer . . . . N. Lat. 49° 18′ 55″.4. Schwerd, *Astr. Nachr.*, VI. 66.
Long. E. from Paris, $0^h\ 24^m\ 25^s.0$. Wurm, *Astr. Nachr.*, XV. 280.

Stockholm . . . N. Lat. 59° 20′ 33″.82. Selander, *Kongl. Vetenskaps Akad. Handlingar*, 1835, p. 204.
Long. E. from Paris, $1^h\ 2^m\ 53^s.33$. Svanberg, *Astr. Nachr.*, XI. 408.

St. Petersburg . N. Lat. 59° 56′ 29″.67. Struve, *Descrip. de l'Observ.*
Long. W. from Pulkowa, $0^h\ 0^m\ 5^s.194$. *Centrale de Poulkova*, p. 292.

Upsala . . . . (New Observatory.)
N. Lat. 59° 51′ 31″.5. Schultz, *Nova Acta Soc. Reg. Upsaliensis*, 1856, p. 208.
Long. W. from Stockholm, $1^m\ 43^s.70$. Thalén, *Ibid.*, 218.

Utrecht . . . . N. Lat. 50° 5′ 10″.53.
Long. E. from Paris, $0^h\ 11^m\ 10^s.65$. Hoek, *Astr. Nachr.*, LIV. 132.

Vienna . . . . N. Lat. 48° 12′ 35″.5. *Berliner Astr. Jahrb.*, 1866, p. 295.
Long. E. from Paris, $0^h\ 56^m\ 11^s.07$. Schumacher, *Astr. Nachr.*, XXIII. 263.

For the private observatory of Mr. Oppolzer, in the Josephstadt,
N. Lat. 19″.4 greater than the Vienna Observatory, *Astr. Nachr.*,
Long. $0^m\ 6^s.4$ West from LX. 182.

Washington . . N. Lat. 38° 53′ 38″.78. Newcomb, *Washington Observ.*, 1864, p. xliv.
Long. W. from Greenwich, $5^h\ 8^m\ 12^s.39$. Gould, *Report to Coast Survey on Trans-Atlantic Longitude.* (See Greenwich.)

The situation of the first, or provisional, Naval Observatory, in which were made the observations in the first volume published by Gilliss, was—

N. Lat. 38° 53′ 32″.8. Gilliss, *Astr. Obs.*, p. viii.
Long. $10^s.05$ E. of present Observatory, *C. S. Report.*, 1846, p. 72.

Wilna . . . . N. Lat. 54° 40′ 59″.1. *Astr. Nachr.*, IV. 562.
Long. E. from Paris, $1^h\ 31^m\ 50^s.31$. *Astr. Journal*, III. 23.

POSITIONS OF THE PRINCIPAL OBSERVATORIES.

(*North Latitudes and West Longitudes are considered as 'positive.*)

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Days.	Longitude from Washington in Arc.
	° ′ ″	h m s	d	° ′ ″
Abo, ...	+60 26 56.8	— 6 37 20.32	—.2759296	260 39 55.2
Albany, ...	+42 39 49.5	— 0 13 12.87	—.0091767	356 41 47.0
Altona, ...	+53 32 45.3	— 5 47 58.54	—.2416498	273 0 21.9
Ann Arbor, . . .	+42 16 48.0	+ 0 26 42.67	+.0185494	6 40 40.0
Armagh, ...	+54 21 12.7	— 4 41 36.92	—.1955662	289 35 46.2
Athens, ...	+37 58 20.0	— 6 43 7.58	—.2799488	259 13 6.3
Berlin, ...	+52 30 16.7	— 6 1 47.77	—.2512473	269 33 3.4
Bilk, ...	+51 12 25.0	— 5 35 17.77	—.2328445	276 10 33.4
Bonn, ...	+50 43 45.0	— 5 36 36.02	—.2337502	275 50 59.7
Breslau, ...	+51 6 56.5	— 6 16 22.19	—.2613679	265 54 27.1
Brussels, ...	+50 51 10.7	— 5 25 41.29	—.2261723	278 34 40.7
Cambridge, (Eng.,)	+52 12 51.8	— 5 8 35.08	—.2142949	282 51 13.8
Cambridge, (Mass.,)	+42 22 48.1	— 0 23 41.54	—.0164530	354 4 36.9
Cape of Good Hope,	—33 56 3.2	— 6 22 8.09	—.2653711	264 27 58.7
Chicago, ...	+41 50 1.0	+ 0 42 14.26	+.0293317	10 33 33.9
Christiania, . . .	+59 54 43.7	— 5 51 6.69	—.2438274	272 13 19.6
Clinton, ...	+43 3 16.5	— 0 6 35.08	—.0045727	358 21 13.8
Copenhagen, . . .	+55 41 13.6	— 5 58 31.05	—.2489703	270 22 14.3
Cracow, ...	+50 3 50.0	— 6 28 2.80	—.2694768	262 59 18.0
Dorpat, ...	+58 22 47.0	— 6 55 6.02	—.2882641	256 13 29.7
Dublin, ...	+53 23 13.0	— 4 42 50.39	—.1964165	289 17 24.1
Durham, ...	+54 46 6.4	— 5 1 52.64	—.2096370	284 31 50.4
Edinburgh, . . .	+55 57 23.2	— 4 55 29.34	—.2052007	286 7 39.9
Florence, ...	+43 46 40.8	— 5 53 15.12	—.2453139	271 41 13.2
Geneva, . . .	+46 11 58.8	— 5 32 49.24	—.2311344	276 47 41.4
Georgetown, . . .	+38 54 26.2	+ 0 0 6.20	+.0000718	0 1 33.0
Göttingen, . . .	+51 31 47.8	— 5 47 58.49	—.2416492	273 0 22.7
Gotha, ...	+50 56 37.5	— 5 51 3.39	—.2437892	272 14 9.2
Greenwich, . . .	+51 28 38.2	— 5 8 12.39	—.2140323	282 56 54.2
Hamburg, . . .	+53 33 7.0	— 5 48 5.95	—.2417355	272 58 30.8
Helsingfors . . .	+60 9 42.6	— 6 48 1.32	—.2833486	257 59 40.2
Hudson, ...	+41 14 42.6	+ 0 17 32.06	+.0121766	4 23 0.9
Kasan, ...	+55 47 24.2	— 8 24 41.14	—.3504761	233 49 42.9
Königsberg, . . .	+54 42 50.6	— 6 30 11.87	—.2709707	262 27 2.0
Kremsmünster, . .	+48 3 23.7	— 6 4 45.03	—.2532990	268 48 44.6
Leipsic, ...	+51 20 6.3	— 5 57 46.87	—.2484592	270 33 17.0
Leyden, ...	+52 9 20.3	— 5 26 8.57	—.2264881	278 27 51.5
Liverpool, . . .	+53 24 47.7	— 4 56 12.34	—.2056984	285 56 54.9
Madras, ...	+13 4 9.2	—10 29 9.67	—.4369175	202 42 35.0
Mannheim, . . .	+49 29 12.9	— 5 42 3.06	—.2375354	274 29 14.1
Markree, ...	+54 10 31.8	— 4 34 24.00	—.1905556	291 24 0.0
Marseilles, . . .	+43 17 49.0	— 5 29 40.55	—.2289415	277 34 51.8
Milan, ...	+45 28 0.7	— 5 44 58.20	—.2395625	273 45 27.0

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Days.	Longitude from Washington in Arc.
	° ′ ″	h m s	d	° ′ ″
Modena, ...	+44 38 52.8	— 5 51 55.53	—.2443927	272 1 7.1
Moscow, ...	+55 45 19.8	— 7 38 29.29	—.3183946	245 22 40.7
Munich, ...	+48 8 45.0	— 5 54 38.00	—.2462731	271 20 30.0
Naples, ...	+40 51 46.6	— 6 5 10.95	—.2535990	268 42 15.8
New York, . . .	+40 43 48.5	— 0 12 15.47	—.0085124	356 56 8.0
Nicolajew, . . .	+46 58 20.6	— 7 16 6.53	—.3028534	250 58 22.1
Olmütz, ...	+49 35 43.0	— 6 17 15.43	—.2619841	265 41 8.6
Oxford, ...	+51 45 35.5	— 5 3 9.79	—.2105300	284 12 33.2
Padua, ...	+45 24 2.5	— 5 55 41.17	—.2470043	271 4 42.5
Palermo, ...	+38 6 44.0	— 6 1 37.00	—.2511227	269 35 45.0
Paramatta, . . .	—33 48 49.8	—15 12 18.64	—.6335491	131 55 20.4
Paris, ...	+48 50 11.0	— 5 17 33.02	—.2205211	280 36 44.7
Philadelphia, . . .	+39 57 7.5	— 0 7 33.64	—.0052505	358 6 35.4
Prague, ...	+50 5 18.5	— 6 5 53.52	—.2540917	268 31 37.2
Pulkowa, ...	+59 46 18.1	— 7 9 31.06	—.2982757	252 37 14.1
Rome, ...	+41 53 53.7	— 5 58 8.53	—.2487098	270 27 52.1
San Fernando, . .	+36 27 45.0	— 4 43 22.42	—.1967873	289 9 23.7
Santiago, ...	—33 26 42.0	— 0 25 30.00	—.0177083	353 37 30.0
Senftenberg, . . .	+50 5 10.1	— 6 14 3.00	—.2597570	266 29 15.0
Speyer, ...	+49 18 55.4	— 5 41 58.00	—.2374769	274 30 30.0
Stockholm, . . .	+59 20 33.8	— 6 20 26.35	—.2641939	264 53 24.7
St. Petersburg, . .	+59 56 29.7	— 7 9 25.87	—.2982161	252 38 32.0
Upsala, ...	+59 51 31.5	— 6 18 42.70	—.2629942	265 19 19.5
Utrecht, ...	+50 5 10.5	— 5 28 43.67	—.2282832	277 49 5.0
Vienna, ...	+48 12 35.5	— 6 13 44.09	—.2595381	266 33 58.7
Washington, . . .	+38 53 38.8	0 0 0.00	.0000000	0 0 0.0
Wilna, ...	+54 50 59.1	— 6 49 23.33	—.2842978	257 39 10.1

ON THE ARRANGEMENT AND USE OF THE TABLES IN THIS EPHEMERIS.

This Ephemeris is divided into two distinct parts. One part is designed for the special use of Navigators, and adapted to the Meridian of Greenwich.

The other part is suited to the convenience of Astronomers, on this continent particularly, and is adapted to the Meridian of Washington.

THE NAUTICAL PART.

This part contains the Ephemeris of the Sun and Moon; the distances of the Moon from the centres of the Sun and the four most conspicuous Planets, and from certain Fixed Stars; the Ephemeris of the Planets Venus, Mars, Jupiter, and Saturn; and the Mean Places of 198 principal Fixed Stars for the beginning of the year 1871.

Time.—Astronomers make use of several different kinds of time; an explanation of the nature of which, and of the method of passing from one to another, properly precedes an explanation of the uses of the Ephemeris.

Sidereal Time.—Sidereal Time is measured by the daily motion of the stars, or, as it is used by astronomers, by the daily motion of that point in the equator from which the true right ascensions of the stars are counted. This point is the vernal equinox, and its hour angle is called the *Sidereal Time.* Astronomical clocks are regulated to sidereal time.

A *Sidereal Day* is the interval of time between the transit of the vernal equinox over any meridian, and its next succeeding return to the same meridian. It is divided into 24 hours. The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the true vernal equinox over the upper meridian, and ending with its return to the same meridian.

The vernal equinox is not a fixed, but a movable, point on the equator. Its motion is composed of two parts: precession, which is proportional to the time, and is combined with the daily motion of the heavens; and nutation, which is periodical. In consequence of the latter, the daily motion of the equinox is not strictly a uniform measure of time, and the Sidereal Time in common use might therefore be called *Apparent Sidereal Time;* and *Mean Sidereal Time* would be that reckoned from the transit of the mean equinox; but the irregularity referred to cannot exceed $2^s.3$ in a period of nineteen years, and is, therefore, of no practical importance.

Solar Time.—Solar Time is measured by the daily motion of the sun. A *Solar Day* is the interval of time between two successive transits of the sun over the same meridian; and the hour angle of the sun is called *Solar Time.* This is the most natural and direct measure of time. But the intervals between the successive returns of the sun to the meridian are not exactly equal, but depend upon the variable motion of the sun in right ascension.

The want of uniformity in the sun's motion in right ascension arises from two different causes; one, that the sun does not move in the equator, but in the ecliptic; the other, that the sun's motion in the ecliptic is not uniform.

To avoid the irregularity in time caused by the want of uniformity in the sun's motion, a fictitious sun, called a *Mean Sun,* is supposed to move in the equator with a uniform velocity.

Mean Time, which is perfectly equable in its increase, is measured by the motion of this *Mean Sun;* the latter at certain periods agrees with the real sun, then again is in advance of it, and at other times is behind it. The clocks in ordinary use, and chronometers used by Navigators, are regulated to *mean* time.

True or *Apparent Time* is measured by the motion of the real sun.

The difference between the *true* and *mean* time is called the *Equation of Time.* By means of it we pass from *true* to *mean* time, or the reverse. Thus, if the *true* time be given, the *mean* time corresponding to it will be obtained by adding or subtracting the equation of time, according to the precept at the head of the column in which it is found, on page I. of the Calendar. If the *mean* time be given, the *true* time is obtained by applying the equation of time as directed by the precept on page II. of the Calendar.

Day.—The *civil day,* according to the customs of society, commences at midnight, and comprises twenty-four hours from one midnight to the next following. The hours are counted from 0 to 12 from midnight to noon, after which they are again reckoned from 0 to 12 from noon to midnight. Thus the day is divided into two periods of 12 hours each; the first of which is marked A. M., the last is marked P. M.

The *astronomical day* commences at noon of the civil day of the same date. It also comprises twenty-four hours, but they are reckoned from 0 to 24, and from the noon of one day to that of the next following. The astronomical, as well as the civil, time may be either *apparent,* or *mean,* according as it is reckoned from *apparent* noon, or from *mean* noon.

The civil day begins twelve hours before the astronomical day; therefore the first part of the *civil day* answers to the last part of the preceding *astronomical day,* and the last part of the *civil day* to the first part of the same *astronomical day.* Thus, January 9th, 2^h A. M., *civil time,* is January 8th, 14^h, *astronomical time;* and January 9th, 2^h P. M., *civil time,* is also January 9th, 2^h, *astronomical time.* The rule, then, for the transformation of the civil time into astronomical time is this: If the civil time is marked A. M., take one from the date, and add twelve to the hours, and the result is the astronomical time wanted; if the civil time is marked P. M., take away the designation P. M., and the astronomical time is had without further change.

If the longitude be expressed in time, and, when it is *west, added* to the local time, or, when it is *east, subtracted* from the local time, the result is the corresponding Greenwich time. If the local astronomical time is used, the result is the *Greenwich astronomical time,* which ordinarily is required for the use of this Part of the Ephemeris.

THE CALENDAR.—The Calendar is divided into twelve months, and to each month are assigned eighteen pages, of which the contents are as follows:

Page I. contains the *Apparent Right Ascension and Declination* of the Sun and the *Equation of Time* for each Greenwich *apparent* noon. Adjoining columns contain the differences of these quantities for one hour. By multiplying this difference by the hours and parts of an hour from Greenwich apparent noon, and adding the amount to, or subtracting it from, the quantity at noon, according as that quantity is increasing or decreasing, we obtain the value of the quantity for a given *Greenwich apparent time.* The hourly differences are given for the instant of apparent noon at Greenwich, and, when great accuracy is required, should be first interpolated for *half* the hours and parts of an hour of the Greenwich apparent time.

This page is chiefly used when the sun is observed on the meridian, and the local apparent time is 0. The longitude from Greenwich expressed in time, if *west,* is at that instant the Greenwich apparent time, or time *after* Greenwich apparent noon;—if *east,* it is time *before* Greenwich apparent noon;—and may be employed in reducing the quantities on this page to apparent noon at any place.

The Right Ascension of the sun thus reduced is the *Sidereal Time of Local Apparent Noon.* The difference between it and the clock time of the meridian passage of the sun is the error of the clock on *sidereal* time.

The Declination of the sun reduced to the meridian, or apparent noon, of the place, is needed in finding the latitude from a meridian altitude of the sun.

As an example of the use of this page, let the sun's declination be required at noon of April 3d, 1871, in longitude 146° 4′ W., or $+9^h\ 44^m\ 16^s$. We first find—

For April 3d, at Greenwich *apparent* noon, ☉'s declination		$= 5^{\circ}\ 15\ 2''.5$ N.
The diff. for 1 hour, $+57''.43$, multiplied by 9, is	$516''.87$	
The proportional part for $30^m = \frac{1}{2}^h$,	28.72	
" " " $12^m = \frac{1}{5}^h$,	11.49	
" " " $2^m = \frac{1}{30}^h$,	1.91	
" " " $15^s = \frac{1}{8}$ of 2^m,	.24	
The sum to be ~~subtracted,~~ added,	559.23 or	9 19.2 N.
The sun's declination required,		5 24 21.7 N.

The longitude $9^h\ 44^m\ 16^s = 9^h\ 44^m.27 = 9^h.738$; and $57''.43 \times 9.738 = 559''.25 = 9'\ 19''.25$; which is also the reduction obtained in another way.

If the longitude is 146° 4′ E., the reduction, 9′ 19″.2, should be subtracted, and the resulting declination becomes 5° 5′ 43″.3 N.

If greater precision is required, the hourly difference may be first interpolated for $4^h\ 52^m$ *after* noon for the *west* longitude, or for $4^h\ 52^m$ *before* noon for the *east* longitude. This will give, in the first case, the hourly difference 57″.38, and the resulting declination 5° 24′ 21″.3 N.; and, in the second case, the hourly difference 57″.48, and the declination 5° 5′ 42″.8 N.

At sea, however, it is ordinarily sufficient to have the declination to the nearest half minute; and the reduction may be found by Table V. of Bowditch's *American Practical Navigator.*

The *Equation of Time*, as has been before explained, is the number of minutes and seconds to be added to or subtracted from the *apparent* time, or the time given by an observation of the sun, to obtain the *mean* time. The heading of the column directs the manner in which the equation is to be applied. Where there is a change in the course of the month from addition to subtraction, or the reverse, as in the months of April and June, the two different directions are separated by a line, while a corresponding line below points out the date at which the change takes place. As given on page I. the equation of time is also the *mean* time of *apparent* noon.

On page I. are also given the *Sun's Semidiameter*, which is used in reducing the altitude of a limb of the sun, or the angular distance of the limb from the moon or some other object, to the altitude, or distance, of the centre of the sun; and the *Sidereal Time of the Semidiameter passing the Meridian*, which is employed in obtaining the passage of the sun's centre over the wires of a transit-instrument, when the passage of one limb only has been observed. The quantity found in this column is to be added to the time of transit of the *first*, or western, limb, to be subtracted from the time of transit of the *second*, or eastern, limb.

Page II. contains for each Greenwich *mean* noon the *Apparent Right Ascension* and *Declination of the Sun*, the *Equation of Time*, and the *Sidereal Time of Mean Noon.* The hourly changes of these quantities are also given for noon, and may be used in reducing them to any given Greenwich *mean* time. The hourly changes may be first interpolated for half the Greenwich time, when great precision is required.

The Right Ascension and Declination on pages I. and II. are affected by ***Aberration***, and therefore denote the *apparent* position of the *true* sun. Page II. is more conveniently used when the *mean* time is known. This is the case in most observations of the sun out of the meridian, when the times have been noted by a clock or chronometer regulated to *mean* time. The quantities can be reduced to mean noon of any place by interpolating for the longitude, as in the example of the sun's declination on the preceding page.

The sun's declination is required for finding the latitude of the place, the local time, and the sun's azimuth and amplitude, from observations of the sun.

The equation of time is needed in finding the local time from observations of the sun, and the latitude from other than meridian observations. The heading of the column directs the manner in which it is to be applied to *mean* time to obtain the *apparent* time.

As given on page II., the equation when *additive* is the apparent time of mean noon; and in general it is the hour angle of the *true* sun at the instant of *mean* noon.

The *Sidereal Time of Mean Noon* is also the ***Right Ascension of the Mean Sun.*** It may be reduced for the longitude, or to any Greenwich *mean* time, by using the hourly difference, $9^s.8565$; or by Table III. in the appendix of the *American Ephemeris* for *reducing intervals of mean solar to sidereal time.* Table LI. of Bowditch's *Navigator* may be used for the same purpose when the nearest quarter of a second only is required.

The sun's right ascension and the sidereal time of mean noon, or right ascension of the mean sun, are useful in converting solar time to sidereal time. If we add the right ascension of the *true* sun to the *apparent* time, or the right ascension of the *mean* sun to the *mean* time, the result will be the *sidereal* time.

The sidereal time of mean noon is also used in converting sidereal time to mean time, by first reducing it for the longitude of the place. Subtracting the reduced value from the given sidereal time, gives the interval of sidereal time from noon. Subtracting from this the corresponding reduction of a *sidereal interval to a mean time interval* in Table II. of the *American Ephemeris*, or Table LII. of Bowditch's *Navigator*, will give the mean time required. This reduction may also be found by multiplying $9^s.8296$ by the hours and parts of an hour of the given *sidereal* time.

As examples of the use of page II. :—

1. Let the sun's right ascension and the equation of time be required for 1871, April 15, $6^h\ 12^m\ 13^s$ A. M. mean time at a place whose longitude is 118° 14′ E.

		h m s
The local astronomical *mean* time is	April 14,	18 12 13
The longitude in time,		— 7 52 56
The Greenwich *mean* time,	April 14,	10 19 17
	or April 14,	10.3214

	Sun's R. A		*Equation of time.*	
	h m s		m s	
April 14, *Noon*,	1 29 10.91	April 14, *Noon*,	0 18.82	*Subtractive.*
H. D. $9^s.220 \times 10.3214$	+ 1 35.16	H. D. — $0^s.636 \times 10.3214$ =	— 6.57	
	1 30 46.07		0 12.25	

If greater precision is required, the hourly differences interpolated to $5^h.2$, or $9^s.223$ for the right ascension, and $0^s.633$ for the equation of time, should be used.

The equation of time in this example is *subtractive from* mean time. Its reduction could have been found by Table VI. A. of Bowditch's *Navigator* to seconds only.

2. If the sidereal time is required for the same date and time, we have—

	h m s
April 14, *Noon*, the R. A. of the mean sun is	1 28 52.09
Add the H. D. $9^s.8565 \times 10.3214$, or the red. for $10^h\ 19^m\ 17^s$ in Tab. III	+ 1 41.73
Add the local *astronomical* mean time	18 12 13.00
The required sidereal time is	19 42 46.82

The reduction $1^m\ 41^s.73$ could have been found in Table III. corresponding to the Greenwich mean time, $10^h\ 19^m\ 17^s$. By Table LI. of Bowditch's *Navigator*, the reduction is $1^m\ 41^s.7$.

3. 1871, April 15, A. M., at a place whose longitude is 118° 14′ E., suppose the sidereal time to be 19^h 42^m $46^s.82$, and that the corresponding mean time is required.

The astronomical day is April 14; the longitude in time — 7^h 52^m 56^s, or — $7^h.882$

	h	m	s
April 14, the sidereal time of Greenwich mean noon is	1	28	52.09
The H. D. $9^s.8565 \times (-7.882)$, or the red. for 7^h 52^m 56^s in Table III.	—	1	17.69
The sidereal time of local noon,	1	27	34.40
The given sidereal time,	19	42	46.82
Subtracting the first from the second gives the *sidereal interval* from noon	18	15	12.42 $= 18^h.254$
$-9^s.8296 \times 18.254$, or the red. for 18^h 15^m 12^s in Table II.,	—	2	59.42
The required mean time, April 14,	18	12	13.00

Page III. contains the *Longitude* and *Latitude of the Sun*, and the *Logarithm of its Distance from the Earth*, at Greenwich Mean Noon of each day. The Longitude is given in two columns, headed λ and λ'; of which, λ, is the sun's longitude counted from the true equinox of the date; and λ' is the same coördinate counted from the mean equinox of the beginning of the year. A column of hourly differences enables the computer to obtain the sun's longitude for any hour from noon. The hourly differences of the logarithm of the radius vector are likewise given. The longitudes of the sun are the true longitudes, not affected by aberration. The latitude is referred to the ecliptic of the date.

The last column on page III. contains the *Mean Time of Sidereal* 0^h, or 24^h—the right ascension of the mean sun. It may be reduced to any meridian by interpolating for the longitude, or to any Greenwich *sidereal* time by means of the hourly difference,—$9^s.8296$. The reduction, however, can be taken directly from Table II. of the American Ephemeris, for *reducing intervals of sidereal time to mean solar time*, or Table LII. of Bowditch's *Navigator*.

This column is used in converting sidereal time to mean time. As an illustration let us take Example 3, above.

	h	m	s
April 13, the mean time of Greenwich sidereal 0^h is	22	31	22.46
The H. D. $-9^s.8296 \times (-7.882)$, or the red. for long., Table II.,	+	1	17.48
The mean time of local sid. 0^h,	22	32	39.94
Add the given sidereal time,	19	42	46.82 $= 19^h.713$
The sum is	42	15	26.76
$-9^s.8296 \times 19.713$, or the red. for 19^h 42^m 47^s in Table II.,	—	3	13.77
The required mean time, April 13,	42	12	12.99
or April 14,	18	12	12.99

It was readily seen in advance that the sum of the mean time of sidereal 0^h and the given sidereal time would be more than 24^h. The mean time of sidereal 0^h was therefore taken out for April 13, that is the *preceding* astronomical day.

Page IV. contains the *Moon's Semidiameter* and *Equatorial Horizontal Parallax* for every mean noon and midnight at Greenwich. Columns adjoining those of the Horizontal Parallax give the change of this quantity in one hour, by means of which it can be reduced to any other Greenwich mean time in the same way as the sun's declination and the equation of time in the preceding examples. The sign *plus* or *minus* (+ or —) prefixed to the hourly differences, shows whether the horizontal parallax is increasing or decreasing.

The reduction of the moon's semidiameter may be readily found from the reduction of the horizontal parallax, by multiplying it by 0.273. It also may be obtained from Table XI. of Bowditch's *Navigator*, or by simply computing the proportional part.

If, for example, the semidiameter of the moon is to be taken out for 1871, Nov. ~~28~~, 9^h P. M. Greenwich mean time, we see that the difference of the semidiameters at noon and midnight of Nov. 18 is $6''.0$; then we say— as $12^h : 9^h = 6''.0 : 4''.5$ 18

which is the correction to be *subtracted* from the semidiameter at noon, because the semidiameter is *decreasing*. The moon's semidiameter, then, for Nov. 18 9^h is 16′ 3″.4 — 4″.5, or 15′ 58″.9.

The moon's semidiameter and horizontal parallax are required for all observations of the moon. When great precision is needed, the hourly differences should be first interpolated for *half* the interval of Greenwich time from noon or midnight, and a correction applied to the horizontal parallax for the latitude of the place of observation.

The *Mean Time of the Moon's Meridian Passage* at Greenwich, which is given on page IV. to minutes and tenths of minutes, is also accompanied with a column of differences for one hour of longitude, by means of which, having the longitude turned into time, the time of the moon's meridian passage at any other place may be computed. The reduction may be taken from BOWDITCH's Table XXVIII. by simple inspection. The last column of this page contains the *Age* of the Moon, or the time elapsed since the preceding new moon, to tenths of days.

Pages V. to XII., inclusive, contain the *Moon's Right Ascension* and *Declination* for each day and hour of Greenwich *mean* time. They are accompanied with columns of *differences for one minute*, which are also given at each hour. The right ascension and declination of the moon change so rapidly, that, if they were not given at frequent intervals, the moon would cease to be useful to the practical navigator as a means of determining the latitude and time. These quantities are wanted for Greenwich mean time, which is either taken directly from a well-regulated chronometer, or is obtained by applying the longitude, turned into time, to the local mean time of the observer. Each is taken out for the day and hour of the Greenwich *mean* time; the *diff. for* 1^m multiplied by the *minutes* and parts of a minute of the Greenwich time; and the product added to, or subtracted from, the quantity, according as the quantity is increasing or decreasing.

Thus, suppose the moon's right ascension and declination are required for 1871, June 4, 6^h 15^m 20^s, astronomical mean time at Greenwich:

	Right Ascension.		*Declination.*
	h m s		° ′ ″
June 4, 6^h	18 20 16.12		23 43 23.7 S.
Diff. $2^s.7419 \times 15.333$	+ 42.04	+ 2″.134 × 15.333	— 32.7 S.
June 4, 6^h 15^m 20^s	18 20 58.16		23 43 56.4 S.

The differences interpolated for $7^m.67 = 0^h.13$ are for the right ascension $2^s.7418$, and for the declination 2″.111, which may be used for greater precision.

Page XII. contains also the *Phases of the Moon* and the dates of the *Moon's Perigee and Apogee*, or least and greatest distances from the earth.

Pages XIII. to XVIII., inclusive, contain the *Lunar Distances*, or the angular distances of the centre of the moon from the centre of the sun, the four larger planets, and certain fixed stars, as they would appear to an observer at the centre of the earth. They are given for every third hour of Greenwich mean time, beginning at noon; the dates are therefore *astronomical*. All the distances that can be observed on the same day are grouped together under that date; and the columns are read from left to right, across both pages of the same opening. The letter W., or E., is affixed to the name of the sun, planet, or star, to indicate that it is on the west, or east, side of the moon.

An observer on the earth's surface having measured a *Lunar Distance*, corrected it for errors of his instrument and for the semidiameter of the objects, and cleared it from the effects of refraction and parallax, finds the *true*, or *geocentric*, distance. With this distance and the distances in the Ephemeris of the same bodies on the same day, the *Greenwich mean time* of the observation can be found.

To lessen the labor of computation, there is given in the Ephemeris between every two successive distances the *logarithm of the seconds of time in which the distance changes* 1″, or, as it is usually called, the *proportional logarithm of the difference.* It is given for the *middle* instant of the two dates between which it is placed.

For computing the *Greenwich time* we have the following rule:

Find in the Almanac the two distances between which the true distance falls; take out the nearest of these, the hours of Greenwich time over it, and the *P. L. of Diff.* between them:

Find the difference between the true distance and the distance taken from the Almanac; and from the *proportional logarithm* of this difference subtract the *P. L. of Diff.* taken from the Almanac:

The result is the *proportional logarithm* of an interval of time to be *added* to the hours of Greenwich time, taken from the Almanac, when the *earlier* Almanac distance is used; to be *subtracted* from the hours of Greenwich time, when the *later* Almanac distance is used

Or, we may *add* the *common logarithm* of the difference of the true and the Almanac distances to the *P. L. of Diff.* of the Almanac; and the sum will be the *common logarithm* of the correction to be applied to the hours of Greenwich time. The Table of *Logarithms of small Arcs in Space or Time,* given at the end of this volume, saves the operation of reducing degrees (or hours) and minutes to seconds, and the reverse.

As the *P. L. of Diff.* in the Ephemeris varies, the Greenwich time, found by the methods just described, may not be sufficiently exact. To correct it for such variation, or *2d difference,* take the difference between the *P. L. of Diff.* used and the one which follows it in the Ephemeris, (or, more strictly, half the difference of the preceding and following ones.) With this difference, and the first correction of the Greenwich time already found, enter Table I. Appendix, and take out the corresponding seconds, which are to be *added* to the approximate Greenwich time if the *Prop. Logs.* in the Ephemeris are *decreasing;* to be *subtracted* if they are *increasing.*

Thus the *Greenwich mean time* of the observation can be obtained. If the observer has noted the time of observation by a chronometer, the difference of this chronometer time and the Greenwich mean time will be the *error* of the chronometer as found from the Lunar Distance. The agreement or disagreement of this error with that brought up from the error and rate of a previous date, may show whether the chronometer has run well or ill. In this way Lunar Distances can be used as a check upon the chronometer. By a series of carefully observed Lunar Distances on both sides of the moon, the chronometer error can be tolerably well ascertained.

If the observer has found the *local mean time* of observation from the observed altitude of one of the bodies, or by a watch regulated to that time by recent observations and corrected for change of longitude in the interval, the difference of this local time and the Greenwich time found from the Lunar Distance will be his longitude.

As an example of finding the Greenwich mean time from a Lunar Distance, suppose that on 1871, Jan. 26, about 4^h of Greenwich astronomical time, the corrected distance of the moon's centre from *a* Tauri (*Aldebaran*) is 52° 17′ 43″:

		° ′ ″		
Corrected distance,		**52 17 43**		
Distance in the Ephemeris, Jan. 26, $3^h\ 0^m\ 0^s$		**52 48 13**	**P. L.**	**.2929**
Difference,		**30 30**	**P. L.**	**.7710**
Time from 3^h (*after*)	**+ 0 59 52**		**P. L.**	**.4781**
Corr for 2d Diff., Table I.,	**— 3**	**Diff. of P. Logs.**		**+ 12**
Greenwich Mean Time, Jan 26	**3 59 49**			

By a Table of common logarithms, or a Table of logarithms of small arcs, the reduction of the Greenwich time would be found thus:

P. L. from Ephemeris,			0.2929
Diff. of distances,	30′ 30″ = 1830″	log	3.2624
Red. of Greenwich time,	+ $0^h\ 59^m\ 52^s = 3592^s$	log	3.5553

the result being the same as by the previous method.

Pages 218 to 241, inclusive, contain the Ephemeris of the four principal planets, Venus, Mars, Jupiter, and Saturn. The Ephemeris of each consists of its *apparent right ascension* and *declination*, and their *variations in one hour*, for each Greenwich mean noon; the *mean time of meridian passage;* and, at the bottom of the page, the *semidiameter* and *horizontal parallax.*[*]

North declinations are marked +, south declinations —. + prefixed to the hourly change of declination of the sun, moon, or a planet, indicates that north declinations are increasing, and south declinations are decreasing; — indicates that north declinations are decreasing, south declinations increasing.

The right ascension and declination are needed in all observations of the planet for time, latitude, or azimuth. The mode of reducing them to any instant of Greenwich mean time is the same as in the examples of the sun previously given. The mean time of passage across any meridian can be found by dividing the *daily* difference by 24, and using the *hourly* difference thus obtained, as in the case of the moon; or, the reduction can be found by the proportion: As 24^h (or 360°) is to the longitude, so is the daily difference to the reduction required.

Pages 242 to 244 contain the SUN's *Rectangular* Coördinates referred to the equator and equinox of the date. They were employed in computing the Ephemeris of the Planets. The day of the year, or number of days from January 0, is also given.

Pages 245 to 248 contain the MOON's *true Longitude and Latitude* for each Greenwich mean noon and midnight. The right ascensions and declinations of the moon have been computed from them.

Pages 261 to 264 contain the *Mean Places*, with their *annual variations*, of one hundred and ninety-eight Fixed Stars for the beginning of the year 1871. North declinations are marked +; south declinations —.

The right ascension of a star is also the *sidereal time* of its meridian passage. From this we may roughly find the mean time of meridian passage by adding the *mean time of sidereal* 0^h on page III. of the Calendar, or subtracting the *sidereal time of mean noon* on page II., (disregarding seconds;) but we can find it more exactly by the processes already given for converting sidereal time to mean time.

The right ascension and declination of a star are generally needed in observations of it for time, latitude, or azimuth. The mean places are sufficiently accurate for most observations at sea; but for more exact observations, the *apparent* places given on pages 265 to 325 should be used.

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[*] The horizontal parallax of Mars, on pages 224 to 229, should be increased by $\frac{1}{30}$th part to correspond with the constant of solar parallax 8″.85.

THE ASTRONOMICAL PART.

This part is adapted to the meridian of Washington; and Washington time, *astronomical* or *sidereal*, is required in its use. The longitude of Washington from Greenwich is assumed to be $+5^{h}\ 8^{m}\ 12^{s}$.

Obliquity of the Ecliptic, &c., page **250**.—This page contains for every ten days of the year the ***Apparent Obliquity***, which is required for the transformation of longitudes and latitudes to right ascensions and declinations, or the reverse; the ***Equation of Equinoxes*** in longitude and right ascension, or the reduction from the ***mean*** to the ***true*** equinox of the date; the ***Precession of Equinoxes*** in longitude, or the reduction of longitudes from the mean equinox of the ***beginning*** of the year to the mean equinox of the ***date;*** the ***Sun's Aberration***, which is to be applied to the ***true*** longitude of the sun, as given in the Ephemeris, to obtain its ***apparent*** longitude; the ***Sun's Horizontal Parallax;*** and the ***Mean Longitude of the Moon's Ascending Node.***

At the bottom of the page are given the ***Mean Obliquity*** for the beginning of the year; the ***Annual Precession*** for the middle of the year, the precession in a sidereal and in a solar day, and the ***daily motion*** of the moon's node in longitude.

Fixed Stars.—Pages 251–259 contain for each mean midnight the logarithms of A, B, C, D, also f, G, H, i, and logarithms of g, h, and i, (following BESSEL's notation), for reducing the ***mean*** places of the Fixed Stars at the beginning of the year to their ***apparent*** places on any day.

The formulæ from which they are derived, and those in which they are used, are given on page 260. The coefficients are those of PETERS and STRUVE. They are expressed in *arc*, but for right ascensions are readily converted to *time* by dividing by 15.

The first set of quantities require for the star the logarithms of a, b, c, d,* a', b', c', d', which are to be found in the Star Catalogues. The other set require no other star constants than the right ascensions and declinations. f, G, and H are given in time, as well as arc, to facilitate their use with tables of sines, &c., which have the argument in time.

Tables IV., V., and VI., in the Appendix, give corrections of the apparent places of several circumpolar stars, and of the quantities A and B for small terms of nutation.

For a star near the pole, it is best to compute the reductions with the time constants and the mean right ascension and declination at the date, instead of the beginning of the year, (or the logarithms of *a*, *b*, *c*, &c., reduced to the date), and add such of the following terms as may be of sufficient magnitude:

In ***Right Ascension.***

$$\left.\begin{array}{l} +0''.00004\ \ \tau^2 \sin a \\ -0''.00224\ \ \tau^2 \cos a \end{array}\right\}\tan\delta$$

$$\left.\begin{array}{l} -0''.000975\ \tau^2 \sin 2a \\ +0''.000154\ \sin 2\Omega\ \cos 2a \\ -0''.000160\ \cos 2\Omega\ \sin 2a \end{array}\right\}\tan^2\delta$$

$$\left.\begin{array}{l} +0''.000930\ \sin 2\odot\ \cos 2a \\ -0''.000933\ \cos 2\odot\ \sin 2a \end{array}\right\}\sec^2\delta$$

$$\left.\begin{array}{l} +0''.00077\ \sin(\odot+\Omega)\ \cos 2a \\ -0''.00076\ \cos(\odot+\Omega)\ \sin 2a \\ +0''.00015\ \sin(\odot-\Omega)\ \cos 2a \\ -0''.00008\ \cos(\odot-\Omega)\ \sin 2a \end{array}\right\}\tan\delta\sec\delta$$

In ***Declination.***

$$\left.\begin{array}{l} +0''.000975\ \ \tau^2 \sin^2 a \\ -0''.000023\ \ \cos 2\Omega \\ -0''.000080\ \ \cos 2\Omega\ \cos 2a \\ -0''.000077\ \ \sin 2\Omega\ \sin 2a \\ +0''.000040\ \ \cos 2\odot \\ -0''.000467\ \ \cos 2\odot\ \cos 2a \\ -0''.000465\ \ \sin 2\odot\ \sin 2a \end{array}\right\}\tan\delta$$

$$\left.\begin{array}{l} -0''.00004\ \cos(\odot+\Omega) \\ -0''.00038\ \cos(\odot+\Omega)\ \cos 2a \\ -0''.00038\ \sin(\odot+\Omega)\ \sin 2a \\ -0''.00038\ \cos(\odot-\Omega) \\ -0''.00004\ \cos(\odot-\Omega)\ \cos 2a \\ -0''.00007\ \sin(\odot-\Omega)\ \sin 2a \end{array}\right\}\sin\delta\tan\delta$$

Pages 261–264 contain the ***mean places*** and their ***annual variations*** of 198 Fixed Stars for 1871, Jan. $0^{d}+.078$, or the instant when the sun's mean longitude was 280°. τ on the preceding pages is reckoned from the same epoch. Stars within 25° of either pole are designated by a *.

***The logarithms of $\frac{1}{15}$ of *a*, *b*, *c*, and *d* are given, so that the reductions of right ascensions shall be in time**

The *apparent* places of α, δ, and λ Ursæ Minoris, and of 51 Cephei, are given on pages 265–276 for every upper transit at Washington. They include the terms depending on 2☾, as well as other small terms on pages 260 and 503, so far as they were of sufficient importance.

The *apparent* places of the remaining 194 stars follow on pages 277–325 in the order of their right ascensions. They are given for every tenth transit, together with *ten times* their *daily* motion at transit; and include all terms of the preceding formulæ exceeding $0^s.003$ in right ascension, or $0''.03$ in declination, except those which depend on 2☾ and ☾ — l'. The mean solar time of transit is also given to the nearest tenth of a day.

Solar Ephemeris.—Pages 326–331 contain the *Apparent Right Ascension* and *Declination* of the SUN for each mean and apparent noon at Washington; the *Hourly Motion* at mean noon; the *Equation of Time* at apparent noon with the sign of its application to apparent time; the SUN's *Semidiameter* and the *Sidereal Time of its passing the Meridian;* and the *Sidereal Time of Mean Noon.* The explanation of these quantities and their use has already been given on pages 496–498.

The SUN's *Horizontal Parallax* is on page 250.

Moon Culminations.—Pages 332–334 contain the mean solar time of the *Upper Transit* of the MOON's *centre* at Washington, expressed to hundredths of a minute, the *difference* for *one hour* of longitude, and the *Sidereal Time of Semidiameter passing the Meridian,* both given for the instant of transit at Washington. The numbers in the fifth column indicate the four STARS in the list of *Moon Culminating Stars,* pages 335–338, the two preceding and the two next following the moon, proper to be observed with the moon at each transit. The *bright Limb* of the *Moon* is indicated by the Roman numerals in the last column.

The time of transit at any place, within six hours of Washington in longitude, may be found with sufficient accuracy from the time of the Washington transit by using the hourly difference interpolated for a longitude *half* that of the given place. With this time, reduced to Greenwich time, the moon's right ascension can be taken from the Lunar Ephemeris, pages V–XII of each month, as in the example on page 500. If greater precision is required, or the place is more than six hours from Washington, we may from the right ascension thus obtained, which is nearly the *local sidereal time,* find the *local mean time* (as on page 499) more accurately than before, and thence the *Greenwich mean time,* and with this revise the computation.

As an example, suppose the right ascension of the bright limb of the moon to be required at the transit of Dec. 15 at San Francisco, in longitude

W. from Washington, $3^h\ 1^m\ 12^s = 3^h.020 = 0^d.1258$.
W. from Greenwich, $8^h\ 9^m\ 24^s$.

			h	m
Transit at Washington, (p. 334)		Dec. 15,	3	39.51
Hourly motion,	$2^m.404 \times 3.020 =$		+	7.26
Transit at San Francisco,		Dec. 15,	3	46.77
Longitude from Greenwich		+	8	9.40
Greenwich mean time		Dec. 15,	11	56.17

		h	m	s
Dec. 15, 12^h (p. 207), Moon's R. A.		21	23	40.94
Diff. for 1^m	$-3.83 \times 2^s.4625 =$		—	9.43
Dec. 15, $11^h\ 56^m.17$, Moon's R. A.		21	23	31.51
Sid. time of semidiam. passing, (p. 334)		—	1	2.33
R. A. of I, or bright, limb at its transit at San Francisco		21	22	29.18

The approximate Declination is — 19° 54′.

The above hourly motion, $2^m.404$ is found by interpolating *forward* $0^d.063$ from that given on p. 334; and the change of right ascension in 1^m, $2^s.4625$, by interpolating 2^m *back* of that given on p. 207 for Dec. 15, 12^h. The time of semidiameter passing the meridian is interpolated *forward* $0^d.126$ from the given on p. 334, and is subtracted from the right ascension of the centre, since the bright limb is I., or the preceding one.

The Greenwich mean time computed from the right ascension of the moon's centre is $0^m.009$, and the revised right ascension $0^s.02$, less than those stated above.

Moon Culminating Stars, pages 335–338.—The *mean* places, with their annual variations, of 174 stars near the moon's path are given for the beginning of the fictitious year (1871, Jan. $0^d + .078$). The names of 35 of them, whose *apparent* places are given in the Ephemeris of the *Fixed Stars*, are printed in SMALL CAPITALS.

The *apparent* places of the others may be obtained by the quantities and formulæ on pages 251–260. To illustrate the use of these, suppose the apparent place of No. 149, ρ Capricorni, one of the four stars proper to be observed with the moon on the 15th Dec., be required at its transit of that date at San Francisco.

The Washington mean time of transit is Dec. 15, $6^h.8$. The quantities from p. 253, or p. 259, are to be taken for a date $5^h.2 = 0^d.22$ *before* midnight of Dec. 15, for which they are there given.

1st *Method.*

(Star Tables)	log a	0.5355	log b	8.1044*n*	log c	8.6089	log d	8.7577*n*
(p. 253)	log A	9.7869	log B	9.9504*n*	log C	0.3183	log D	1.3079
(Star Tables)	log a'	1.0648	log b'	9.9114	log c'	9.1956	log d'	9.2581*n*
	log Aa	0.3224	log Bb	8.0548	log Cc	8.9272	log Dd	0.0656*n*
	log Aa'	0.8517	log Bb'	9.8618*n*	log Cc'	9.5139	log Dd'	0.5660*n*

(p. 338) $\alpha = 20^h\ 21^m\ 29^s.95$ $\delta = -18°\ 14'\ 15''.9$

$Aa =$	$+\ 2.101$	$Aa' =$	$+7.11$
$Bb =$	$+\ 0.011$	$Bb' =$	-0.73
$Cc =$	$+\ 0.085$	$Cc' =$	$+0.33$
$Dd =$	$-\ 1.163$	$Dd' =$	-3.68
$E =$	$-\ 0.003$	$\mu' = +0''.03$	$+0.03$
$\mu = 0^s.000$ $\tau\mu =$	0.000		

Apparent Place, $\alpha' = 20\ 21\ 30.98$ $\delta' = -18\ 14\ 12.8$

2d *Method.*

(p. 338) $\alpha = 20^h\ 21^m.5$ $\delta = -18°\ 14'.3$

(p. 259) $G = 23\ 43.4$ $G + \alpha = 20^h\ 4^m.9 = 301°\ 13'$

" $H = 0\ 23.3$ $H + \alpha = 20\ 44.8 = 311\ 12$

log $\frac{1}{15}$	8.8239	log $\frac{1}{15}$	8.8239	$\alpha =$	$20^h\ 21^m\ 29^s.95$
log g	1.0903	log h	1.3102	$f =$	$+\ 1.878$
l. sin $(G+\alpha)$	9.9321*n*	l. sin $(H+\alpha)$	9.8765*n*	$(g) =$	$+\ 0.231$
l. tan δ	9.5179*n*	l. sec δ	0.0224	$(h) =$	$-\ 1.079$
log (g)	9.3642	log (h)	0.0330*n*	$\tau\mu =$	0.000
Apparent Right Ascension				$\alpha' =$	20 21 30.98
log g	1.0903	log h	1.3102		
l. cos $(G+\alpha)$	9.7146	l. cos $(H+\alpha)$	9.8187	$\delta =$	$-18°\ 14'\ 15''.9$
log (g')	0.8049	l. sin δ	9.4955*n*	$(g') =$	$+\ 6.38$
log i	9.956	log (h')	0.6244*n*	$(h') =$	$-\ 4.21$
l. cos δ	9.977			$(i') =$	$+\ 0.86$
log (i)	9.933			$\tau\mu' =$	$+\ 0.03$
Apparent Declination				$\delta' =$	$-18\ 14\ 12.8$

The MOON's *Semidiameter* and *Equatorial Horizontal Parallax* for each mean noon and midnight are on pages 339–342.* In the moon's ephemeris, as in that of the sun, the hourly motions belong to the instant for which they are given. The hourly motion of semidiameter is equal to .2723 times that of the horizontal parallax.

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* For eclipses and occultations, BURCKHARDT's value of the semidiameter, which is $2''.5$ less, is preferred.

The times of the *Moon's Phases*, *Apogee*, *Perigee*, and *greatest Libration*, are given on page 343; and the position of the *Moon's Equator* and the *Moon's mean longitude* on page 344; and a Table for computing the *Libration* of the Moon on page 345.

The *Ephemerides of the seven principal Planets* (pp. 346–387) are given both for *mean noon* and the time of *transit*. The *hourly differences* are also given for the same instants. Third differences were used in their computation.

The *Horizontal Parallaxes*, *Vertical Semidiameters and Sidereal Times of the Semidiameters passing the Meridian* are on pages 388 and 389.

The *Sun's Coördinates* (pp. 390–401) are given for each mean noon and midnight, referred to the apparent equinox and equator, and also to the mean equinox and equator at the beginning of the year (Jan. $0^{d}.0$). In the case of the rectangular coördinates, only the last four decimals are given for the mean equinox and equator, and the first three places are to be taken from the apparent equinox and equator. When a change of a unit is to be made in the third place, it is indicated by a corresponding colon (:). The latitude is referred to the ecliptic of the date. The reduction to the mean ecliptic of Jan. 0. is $+0''.488\ \tau \sin(\odot + 187^\circ)$, in which τ is the time from Jan. 0, in parts of a year.

The *Heliocentric Coördinates* of the Planets (pp. 402–409) are referred to the mean equinox and ecliptic of the mean noon of the 2405,000th day of the Julian Period, or 1872, July 25.

The columns $-\frac{k^2}{r^3}x$, &c., contain the quantities $-1600\,m\frac{k^2}{r^3}x$, $-1600\,m\frac{k^2}{r^3}y$, $-1600\,m\frac{k^2}{r^3}z$, in units of the 7th decimal place, in which m denotes the mass of the planet, and k^2 the unit of attractive force in the solar system, or $\log k = 8.2355814$.

Page 409 contains the *Inclinations and Longitudes of the Ascending Nodes* at the same epoch, and the *Masses* of the several Planets with their logarithms. The changes of the Inclinations and Nodes in 100 days include the motions of the ecliptic and equinox.

The Heliocentric Coördinates and Masses of the Planets are given for the computation of perturbations.

Eclipses.—Pages 410–416 contain the elements necessary for computation and the principal phases of each eclipse of the SUN and MOON. The semidiameters of the moon are $2''.5$, and those of the sun $2''.2$, less than those in the Ephemeris.

The charts of the *Solar Eclipses* show the part of the world in which each is visible. The dotted curves pass through places, where the eclipse begins, or ends, at an exact hour of Washington mean time, and aid in finding an approximate time of the beginning, or end, at any place. The limits and central line will give some idea of the magnitude of the eclipse. The longitudes are reckoned west from Washington.

The Tables of *Data of the Solar Eclipses* contain certain quantities* derived from the elements and independent of the place of observation. They are given for successive times at the Washington meridian; and if their values for the *Penumbra* be taken out for a time T_0, assumed near that of the beginning, or end, of the eclipse at any place, the prediction for that place may be computed quite accurately by the following formulæ:

Let φ = the latitude of the place, + when north,
λ = its longitude from Washington, + when west,
(*Bessel.*) $\log e = 8.912205$, $\log(1-e^2) = 9.9970916$, $\sin\chi = e\sin\varphi$,
$h = \sec\chi\cos\varphi$, $k = (1-e^2)\sec\chi\sin\varphi$.

$$a = A - h\sin(\mu-\lambda),$$
$$b = B - Ek + Gh\cos(\mu-\lambda),$$
$$c = -C + Fk - Hh\cos(\mu-\lambda),$$
$$m = \sqrt{bc} \qquad \text{(usually with same sign as } a\text{).}$$

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*The formulæ are given in CHAUVENET'S *Spherical and Practical Astronomy*, Vol. I, page 513. The changes of A, B, and C for *one minute*, or *one second*, are expressed in units of the sixth decimal place.

If $m=a$, the time T_0 is correctly chosen. If m differ from a, a correction t of the assumed time may be obtained in seconds by the formulæ,

$$\log \mu' = 1.86167, \qquad a' = A' - \mu' h \cos(\mu - \lambda),$$

$$\tan \tfrac{1}{2} Q = \frac{c}{m} = \frac{m}{b} \qquad b' = B' - \mu' G h \sin(\mu - \lambda),$$

$$t = \frac{1000000\,(m - a)}{a' + b' \cot Q}$$

and a new approximation to the actual Washington time will be

$$T_0' = T_0 + t,$$

with which the computation may be revised.

Thus successive approximations are made until for the last assumed time T_0, $m = a$ very closely, and t is quite small. The local mean time of the phenomenon will be, using the last values of T_0 and t,

$$T_0 + t - \lambda.$$

Q must be taken of the same sign with a, and is a sufficiently near approximation to the angular distance of the point of contact reckoned from the *north* point of the sun's limb towards the *east*.

For a total or annular eclipse, the prediction of the interior contacts may be made in the same way, using the *Data* for the *Shadow;* except that Q will have a sign opposite that of a in a total eclipse.

To find V, the angular distance of the point of contact from the *Vertex* of the sun's limb towards the *east*, we have the formulæ

$$p \sin P = \sin \varphi \qquad c \sin C = \cos P \tan(\mu - \lambda)$$

$$p \cos P = \cos \varphi \cos(\mu - \lambda) \qquad c \cos C = \sin(P - \delta')$$

$$V = Q - C,$$

in which δ' is the sun's declination.

If the values of Q at the beginning and at the end of the eclipse be found, and their difference (with regard to signs) be denoted by $2\,\theta$, the number of digits eclipsed is

$$12\,(1 + n) \sin^2 \tfrac{1}{2}\theta, \qquad \text{or } 12\,(1 + n) \cos^2 \tfrac{1}{2}\theta,$$

according as θ is acute or obtuse: n is the quotient of the semidiameter of the moon divided by that of the sun.

θ may also be found from the formulæ:

$$\tan R = \frac{b'}{a'} \qquad \theta = Q + R$$

(in which R has the sign of b'); and the expression of t may be changed to

$$t = 1000000 \cdot \frac{m - a}{a'} \cdot \frac{\sin Q \cos R}{\sin \theta}.$$

The following is an example of the computation of the beginning of the Eclipse of December 11, 1871, for the Observatory at Madras, for which

$\varphi = +13^\circ\ 4'\ 9''.2$ $\qquad \lambda = 202^\circ\ 42'\ 35''.0$

(1) $\log e = 8.912205$

(2) $\text{l.} \sin \varphi = 9.3543545$ $\qquad (1) + (2)$ $\qquad \text{l.} \sin \chi = 8.266559$

(3) $\log(1 - e^2) = 9.9970916$

(4) $\text{l.} \sec \chi = 0.0000741$ $\qquad (2) + (3) + (4)$ $\qquad \log k = 9.3515202$

(5) $\text{l.} \cos \varphi = 9.9886025$ $\qquad (4) + (5)$ $\qquad \log h = 9.9886766$

By the chart, the Washington mean time of the beginning of the eclipse at Madras is $8^{\text{h}}\ 20^{\text{m}}$.

A nearer approximation is $8^{\text{h}}\ 19^{\text{m}}.4$, for which time we take from the table for *Penumbra*, on page 415, the values of A, B, C, &c.

Computation of t, the correction of T_0.

$\mu = 126^\circ\ 26'\ 34''.5$

$\mu - \lambda = 283\ 43\ 59.5$

(1) l. sin $(\mu - \lambda) = 9.9874033n$

(2) log $h = 9.9886766$

(3) l. cos $(\mu - \lambda) = 9.3754825$

(4) = (1) + (2) log. $h \sin(\mu - \lambda) = 9.976080n$

(5) log $\mu' = 1.86167$

(6) log $G = 9.597617n$

(7) = (2) + (3) log. $h \cos(\mu - \lambda) = 9.364159$

(8) log $H = 9.587920n$

(6) + (7) log. $G h \cos(\mu - \lambda) = 8.961776n$

(7) + (8) log. $H h \cos(\mu - \lambda) = 8.952079n$

(5) + (7) log. $\mu' h \cos(\mu - \lambda) = 1.22583$

(4) + (5) + (6) log. $\mu' G h \sin(\mu - \lambda) = 1.43537$

(20) log $b = 9.839692$

(21) log $c = 9.587576$

(22) = $\frac{1}{2}$ [(20) + (21)] log $m = 9.713634n$

(22) − (20) = (21) − (22) l. tan $\frac{1}{2} Q = 9.873942n$

Angle from N. point, $Q = -73^\circ\ 35'.9$

(29) l. cot. $Q = 9.46886n$

(30) log $b' = 1.74733n$

(29) + (30) log. $b' \cot Q = 1.21619$

(31) log $(m - a) + 6 = 2.5185$

(32) log $(a' + b' \cot Q) = 2.2022$

(31) − (32) log $t = 0.3163$

(9) log $E = 9.962982$

(10) log $k = 9.351520$

(11) log $F = 9.964737$

(9) + (10) log. $E k = 9.314502$

(10) + (11) log. $F k = 9.316257$

(12) $A = -1.46391$

(13) $-h \sin(\mu - \lambda) = +0.94641$

(14) $B = +0.98921$

(15) $-E k = -0.20630$

(16) $G h \cos(\mu - \lambda) = -0.09157$

(17) $-C = +0.09019$

(18) $F k = +0.20714$

(19) $-H h \cos(\mu - \lambda) = +0.08955$

(12) + (13) $a = -0.51750$

(14) + (15) + (16) $b = +0.69134$

(17) + (18) + (19) $c = +0.38688$

$m = -0.51717$

$m - a = +0.00033$

(23) $A' = +\ 159.66$

(24) $-\mu' h \cos(\mu - \lambda) = -\ 16.82$

(25) $B' = -\ 28.64$

(26) $-\mu' G h \sin(\mu - \lambda) = -\ 27.25$

(25) + (26) $b' = -\ 55.89$

(27) = (23) + (24) $a' = +\ 142.84$

(28) $b' \cot Q = +\ 16.45$

(27) + (28) $a' + b' \cot Q = +\ 159.29$

		h	m	s
Assumed time, ...	$T_0 =$	8	19	24.00
Correction of the assumed time, ...	$t =$			+ 2.07
Washington time of the beginning, ...	Dec. 11	8	19	26.07
Madras time of the beginning, ...	Dec. 11	18	48	35.74

We have also $C = -72^\circ\ 29'$; the angle from the *Vertex*, $V = -1^\circ\ 7'$; $\theta = -94^\circ\ 58'$, and the magnitude of the eclipse 11.1 digits, or 0.92 of the sun's disc, on the south limb.

Occultations.—Pages 417–447 contain *Elements for facilitating the Prediction of Occultations of Planets and Stars by the Moon.* The list includes all stars to the 6½ magnitude in the *Catalogue of the British Association*, and a few others of less magnitude, contained in the *Almanac Catalogue of Zodiacal Stars* and chiefly belonging to clusters, which can be occulted during the year 1871.

The elements comprise the *Date, the Name, Magnitude and Declination of the Star;* the *Limiting Latitudes* within which the occultation may be visible; and, at the time of geocentric conjunction of the moon and star in right ascension, the following quantities;

δ = Washington mean time,

H = Hour angle of the star at Washington, + when west;

$$X = \frac{15\,(a - a')}{\pi} \cos \delta = 0, \qquad Y = \frac{\delta - \delta'}{\pi},$$

$$x' = \frac{15\,\Delta a}{\pi} \cos \delta, \quad y' = \frac{\Delta \delta}{\pi},$$ the hourly changes of x and y;

in which α and δ are the true right ascension and declination of the moon,

$\Delta\,\alpha$ and $\Delta\,\delta$, their motions in one hour of mean time,

π, the moon's equatorial horizontal parallax,

α' and δ', the apparent right ascension and declination of the star.

The reductions of the mean place of the star at the beginning of the year to its apparent place at the date, are also given to facilitate the reduction of observed occultations.

For any other Washington mean time $T = \delta + t$, we have (μ being the sidereal equivalent of t, and t as a coefficient being expressed in hours)

$$h = H + \mu, \text{ the star's hour angle at Washington,}$$

$$x = t\,x', \qquad y = Y + t\,y'.$$

As the moon's motion is here regarded as uniform, the expressions for x and y are more nearly correct the smaller the interval t. The exact values, to be employed in the reduction of an observed occultation, are

$$x = \frac{\sin(\alpha - \alpha')\cos\delta}{\sin\pi}$$

$$y = \frac{\sin(\delta - \delta')\cos^2\tfrac{1}{2}(\alpha - \alpha') + \sin(\delta + \delta')\sin^2\tfrac{1}{2}(\alpha - \alpha')}{\sin\pi}$$

in which α, δ and π are to be taken from the Ephemeris for the time T. But for predicting the times of *immersion* and *emersion*, and the points on the moon's limb where these appearances take place, the preceding expressions suffice to enable the observer to determine when and where to watch for these phenomena.

For the place of observation, let

φ = its latitude, + when north;

λ = its longitude from Washington, + when west;

(*Bessel.*) $\log e = 8.9122\ 05$, $\qquad \log(1 - e^2) = 9.9970\ 916$

$$\sin\chi = e\sin\varphi, \qquad E = (1 - e^2)\sec\chi, \qquad F = \sec\chi.$$

$$\mu' = 54147.8\sin 1'', \qquad \log\mu' = 9.41916.$$

The constants for the place, required both in the prediction of occultations and the reduction of those observed, are φ, λ, and $E\sin\varphi$, $F\cos\varphi$, $\mu' F\cos\varphi$, or their logarithms.

The values of E and F and their logarithms are given for different latitudes in the following table:

φ	E.	F.	Log E.	Log F.
0°	1—.0067	1.0000	9.9971	0.0000
±10	1—.0066	1.0000	9.9971	0.0000
20	1—.0063	1.0004	9.9973	0.0002
30	1—.0059	1.0008	9.9975	0.0004
40	1—.0053	1.0014	9.9977	0.0006
50	1—.0047	1.0020	9.9979	0.0009
60	1—.0042	1.0025	9.9982	0.0011
70	1—.0037	1.0030	9.9984	0.0013
80	1—.0034	1.0033	9.9985	0.0014
90	1—.0033	1.0034	9.9985	0.0014

An occultation will not be visible unless,

1. The latitude of the place is included within the limiting parallels;
2. At the time of occultation, or the local mean time ($T - \lambda$), the sun is sufficiently below the horizon;

3. At that time the star is above the horizon, or its local hour angle $(h-\lambda)$ is numerically less than τ found by the formula

$$\cos\tau = -\tan\varphi\tan\delta'.$$

A table of τ, or the hour angle of a body in the horizon, computed for the latitude of the place and different declinations, will be useful for such comparisons.

These conditions can generally be determined in advance, as in latitudes less than 60° $(\text{☌}-\lambda)$ may be used instead of $(T-\lambda)$ except within two hours of sunrise or sunset; and $(H-\lambda)$ instead of $(h-\lambda)$ except within half an hour of the star's rising or setting. For these exceptional cases, which, however, are not favorable for observation, the time of *apparent* conjunction in right ascension, or some nearer approximation to the time of occultation, can be subsequently employed.

Having ascertained that an occultation will be visible, we may proceed to compute the times of immersion and emersion by the following formulæ:

1. To find approximately the time[*] of *apparent* conjunction in right ascension, as affected by parallax;

$$u = F\cos\varphi\sin(H-\lambda)$$
$$u' = \mu' F\cos\varphi\cos(H-\lambda)$$

In *hours*, $$(t) = \frac{u}{x'-u'}$$

Washington time of *apparent* conjunction, $(T) = \text{☌} + (t)$

Local " " " $(T)-\lambda$

The value of (T) to the nearest tenth of an hour is sufficiently accurate. If a closer approximation is desired, the computation may be repeated, using $h = H + (\mu)$ instead of H (μ) being the sidereal equivalent of (t),

$$x = (t)\,x' \qquad (t') = -\frac{x-u}{x'-u'}$$
$$(T') = (T) + (t').$$

2. To find a nearer approach to the time of either phase, let us assume the Washington mean time T, which for the first computation may be the computed time of *apparent* conjunction, or some conjectural time near it. For this time find

$$t = T - \text{☌} \qquad h = H + \mu, \text{ or } h - \lambda = H - \lambda + \mu$$
$$x = t\,x' \qquad y = Y + t\,y',$$

and then T_1 and T_2, the approximate Washington mean times of immersion and emersion, by the following formulæ. The local mean times will be found by subtracting the longitude of the place.

$$A\sin B = E\sin\varphi \qquad u = F\cos\varphi\sin(h-\lambda)$$
$$A\cos B = F\cos\varphi\cos(h-\lambda)^{\dagger} \qquad v = A\sin(B-\delta')$$
$$u' = \mu' A\cos B$$
$$v' = \mu' u\sin\delta'$$

[or, with other auxiliaries than A and B,

$$b = F\cos\varphi\cos(h-\lambda) \qquad u' = b\,\mu' \qquad v = E\sin\varphi\cos\delta' - b\sin\delta']$$

$$m\sin M = x - u \qquad n\sin N = x' - u'$$
$$m\cos M = y - v \qquad n\cos N = y' - v'$$

(*Burckhardt.*) $k = .27227$ $\quad\log k = 9.43500$

$$\cos\psi = \frac{m\sin(M-N)}{k} \qquad \psi < 180^\circ$$

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[*] It is convenient, but not necessary, to have this time.

[†] If $(h-\lambda)$ be restricted to values numerically less than 12^h, or 180°, B may be taken in the same quadrant with $(h-\lambda)$, and have the same sign as the latitude. For a place where many occultations are observed, tables of A, B, u and u' for different values of $(h-\lambda)$, or of $E\sin\phi\cos\delta'$ for different declinations, would be convenient.

For *Immersion*. For *Emersion*.

In hours, $t_1 = -\frac{m \cos (M-N)}{n} - \frac{k \sin \psi}{n}$ $t_2 = -\frac{m \cos (M-N)}{n} + \frac{k \sin \psi}{n}$

Washington mean time, $T_1 = T + t_1$ $T_2 = T + t_2$

Local " " $T_1 - \lambda$ $T_2 - \lambda$

3. Assuming now $T_1 = \delta + t + t_1$ for the Immersion, or $T_2 = \delta + t + t_2$ for the Emersion, as the Washington time instead of T, and recomputing, we can obtain nearer approximations to the times of these phenomena. But the first operation will give the times usually within one or two minutes, which is sufficiently accurate for watching for an immersion. For an emersion a more accurate knowledge is desirable. But for this purpose it will often be sufficient to substitute $(h_2-\lambda) = (h-\lambda + \frac{1}{2}\mu_2)$ for $(h-\lambda)$ in the computation of u' and v', and, using the same m and M as before, recompute n, N, ψ and t_2, a new correction to be added to T.

If log. $m \sin (M-N) = 9.4350$ nearly, a recalculation will generally be necessary to determine whether, numerically, $\cos \psi < 1$, or $\cos \psi > 1$. In the latter case the impossible value of $\cos \psi$ indicates that an occultation at the given place is impossible, unless the computed distance from the moon's limb is within the errors of the Ephemeris of the moon and star.

In such cases of near approach to the moon's limb, we may take $\psi = 0°$, or $180°$, according as $m \sin (M-N)$ is + or −; and for finding the time of nearest approach,

$$t = -\frac{m \cos (M-N)}{n}$$

The distance from the moon's limb is then

$$\pi \, [m \sin (M-N) - k],$$

disregarding the sign of $m \sin (M-N)$; or, allowing for the augmentation of the semidiameter,

$$\pi \, [m \sin (M-N) - k] \, [1 + z \sin \pi],$$

where

$$z = A \cos (B - \delta').$$

4. Having found satisfactorily the times of immersion and emersion, and therefore N and ψ in each case, we have as the angle from the *North point* of the moon's limb and reckoned towards the *West*,

$$Q = 90° - N - \psi \quad \text{for an } \textit{Immersion},$$
$$Q = 90° - N + \psi \quad \text{for an } \textit{Emersion};$$

and, taking

$$c \sin C = u + t \, u'$$
$$c \cos C = v + t \, v'$$

in which the last value of t for the particular phase is properly used, we have as the angle from the *Vertex* of the moon's limb, or that point which is nearest the zenith,

$$V = Q + C$$

also reckoned towards the *West*.

For the image as seen through an inverting telescope, these angles should be increased by 180°.

5. As a check on the accuracy of the work, we have, using the last computed values of the several quantities,

$$[(x-u) + t\,(x'-u')]^2 + [(y-v) + t\,(y'-v')]^2 = k^2 = 0.07413;$$

Or, we may recompute with the last determined time of immersion, or of emersion u, v, x, and y, and we should have for either, as the condition of the phenomenon,

$$(x-u)^2 + (y-v)^2 = k^2 = 0.07413$$

or, $\log m = \log k = 9.4350$

Greater values than these indicate that the computed time of immersion is too early, and of emersion too late, by a quantity nearly proportional to the difference.

As an example, suppose it is required to find the times of immersion and emersion of *l* Tauri, January 3, 1871, at Astor Point, Oregon, for which

$$\varphi = +46^\circ\ 11'.5 \qquad \lambda = +3^{h}\ 7^{m}.1.$$

The data for the computation are given on page 417. We see in advance that ϕ is between the limiting parallels; that (☌ $-\lambda$) is $13^{h}.6$, or about 6^{h} before sunrise; and that $(H-\lambda)$ is about 3^{h}, or 4^{h} less than the star's hour angle at setting.

The constants of the place are:

$\text{l.}\sin\phi = 9.8583$ $\qquad$ $\text{l.}\cos\phi = 9.8403$

$\log E = 9.9978$ $\qquad$ $\log F = 0.0008$ $\qquad$ $\log \mu' = 9.4192$

(1) $\log. E\sin\phi = 9.8561$ $\qquad$ (2) $\log. F\cos\phi = 9.8411$ $\qquad$ (3) $\log. \mu' F\cos\phi = 9.2603$

From page 417, we find, for the time of *geocentric* conjunction:

Washington time, ☌ $= 16^{h}\ 42^{m}.6$ $\qquad$ $Y = +.3622$ $\qquad$ $\delta' = +20^\circ\ 14'.7$

$H = +6\ 36.7$ $\qquad$ $x' = +.5422$ $\qquad$ $\text{l.}\sin\delta' = 9.5391$

Astor Point time, ☌ $-\lambda = 13\ 35.5$ $\qquad$ $y' = +.1027$

$H-\lambda = +3\ 29.6 = +52^\circ\ 24'$

1. For an approximation to the time of *apparent* conjunction, we have:

(2) $\log. F\cos\phi = 9.841$ $\qquad$ (3) $\log. \mu' F\cos\phi = 9.260$ $\qquad$ $x' = +.542$

(4) $\text{l.}\sin(H-\lambda) = 9.899$ $\qquad$ (5) $\text{l.}\cos(H-\lambda) = 9.785$ $\qquad$ $u' = +.111$

(6) = (2) + (4) $\log u = 9.740$ $\qquad$ (7) = (3) + (5) $\log u' = 9.045$ $\qquad$ $x' - u' = +.431$

(8) $\log(x'-u') = 9.634$

(6) − (8) $\log(t) = 0.106$ $\qquad$ $(t) = +1^{h}.28 = +1^{h}\ 16^{m}.8$

☌ $= 16\ 42.6$

Washington mean time, $(T) =$ ☌ $+ (t) = 17\ 59.4$

2. Assuming $T = 17^{h}\ 59^{m}.4$, and therefore $t = +1^{h}\ 16^{m}.8$, we proceed as follows to find the times of immersion and emersion:

(9) Sid.eq. of t $\quad \mu = +1^{h}\ 17^{m}.0$

(10) $H-\lambda = +3\ 29.6$

(11) = (9) + (10) $h-\lambda = +4\ 46.6 = 71^\circ\ 39'$

(12) $\text{l.}\sin(h-\lambda) = 9.9773$

(13) = (2) $\log. F\cos\phi = 9.8411$

(14) $\text{l.}\cos(h-\lambda) = 9.4981$

(15) $\text{l.}\sin\delta' = 9.5391$

(16) = (12) + (13) $\log u = 9.8184$ $\Big\}$ $\text{l.}\,v' = 8.7767$

(17) *Constant,* $\log\mu' = 9.4192$

(18) = (13) + (14) $\log. A\cos B = 9.3392$ $\Big\}$ $\text{l.}\,u' = 8.7584$

(19) = (1) $\log. A\sin B = 9.8561$

(20) = (19) − (18) $\text{l.}\tan B = 0.5169$ $\qquad B = +73^\circ\ 5'$

(21) $\text{l.}\sin B = 9.9808$ $\qquad \delta' = +20\ 15$

(22) = (19) − (21) $\log A = 9.8753$ $\qquad B-\delta' = +52\ 50$

(23) $\text{l.}\sin(B-\delta') = 9.9014$

(24) = (22) + (23) $\log v = 9.7767$

(25) $X = 0$

(26) $tx' = 1.28 \times .5422 = +.6940$

(27) $Y = +.3622$

(28) $ty' = 1.28 \times .1027 = +.1315$

(29) = (25) + (26) $x = +.6940$

(30) $u = +.6583$

(31) = (27) + (28) $y = +.4937$

(32) $v = +.5980$

(33) = (29) − (30) $x - u = m\sin M = +.0357$

(34) = (31) − (32) $y - v = m\cos M = -.1043$

(35) $x' = +.5422$

(36) $u' = +.0573$

(37) $y' = +.1027$

(38) $v' = +.0598$

(39) = (35) − (36) $x' - u' = n\sin N = +.4849$

(40) = (37) − (38) $y' - v' = n\cos N = +.0429$

(41) $\log. m\sin M = 8.5527$

(42) $\log. m\cos M = 9.0183n$

(43) = (41) − (42) $\text{l.}\tan M = 9.5344n$ $\qquad M = +161^\circ\ 6'$

(44) $\text{l.}\cos M = 9.9759n$ $\qquad N = +84\ 57$

$M - N = +76\ 9$

(49) = (41) − (44) $\log m = 9.0424$

(50) $\text{l.}\sin(M-N) = 9.9872$

(51) *Constant,* $\log\frac{1}{k} = 0.5650$ $\qquad 90^\circ - N = +5^\circ\ 3'$

(52) = (49) + (50) + (51) $\text{l.}\cos\psi = 9.5946$ $\qquad \psi = +66\ 51$

(45) $\log. n\sin N = 9.6856$

(46) $\log. n\cos N = 8.6325$

(47) = (45) − (46) $\text{l.}\tan N = 1.0531$

(48) $\text{l.}\sin N = 9.9983$

(49) $\log. m = 9.0424$

(53) $\text{l.}\cos(M-N) = 9.3791$

(54) = (48) − (45) $\log.\frac{1}{n} = 0.3127$

(55) = (49) + (53) + (54) $\log.\frac{m}{n}\cos(M-N) = 8.7342$

APPENDIX.

CONSTRUCTION OF THE ASTRONOMICAL AND NAUTICAL EPHEMERIDES FOR 1871.

THE Precession of the Equinoxes, the Mean Obliquity of the Ecliptic, and the Constant of Aberration (p. 250) are taken from STRUVE and PETERS. They are:

$$\text{Precession}^{*} = 50''.2411 + 0''.0002268\,t,$$
$$\text{Obliquity}^{\dagger} = 23^\circ\ 27'\ 54''.22 - 0''.4645\,t - 0''.0000014\,t^2,$$
$$\text{Aberration}^{\ddagger} = 20''.4451 \pm 0''.0111,$$

in which t is the number of years after 1800.

The Nutation of the Apparent Obliquity and the Equation of the Equinoxes are computed from PETERS' formulæ given in his *Numerus Constans Nutationis*, pp. 46–48, and reprinted in the volume of this Ephemeris for 1855. These quantities have been used in all computations relating to the Fixed Stars.

The General Constants for Star Reduction are computed from tables adapted to the formulæ given on page 260.

In the Ephemerides of the Sun, Moon, and Planets, the Obliquity of the Ecliptic and the Nutation of HANSEN and OLUFSEN's *Tables du Soleil* have been used. The Aberration in these tables, 20″.255, has been used in the Ephemeris of the Sun. The Mean Obliquity exceeds that of PETERS by 0″.37.

The Mean Places of 48 Northern Circumpolar Stars and 128 Time Stars, have been taken from the *Standard Places of Fundamental Stars, U. S. Coast Survey, Second Edition*, by Dr. B. A. GOULD, Washington, 1866. The Mean Places of Sirius, Castor, (the mean of the two components), Procyon, γ Draconis, and α Cephei, are taken from the *Tabulæ Reductionum Observationum Astronomicarum*, WOLFERS, Berlin, 1858; those of β^1 Scorpii, η and β Draconis, and 61^1 Cygni, have been prepared by Mr. G. W. HILL from all the observations which were available; and those of 13 Stars south of —40° dec. have been derived from the *British Nautical Almanac* for 1848. The Places for 1860 and the proper motions of those not contained in Dr. GOULD's list, are given on page 7 of this Appendix.

The magnitudes, except of the 13 southern stars, are ARGELANDER's. In the nomenclature (H) signifies that HEVELIUS's number, (B) that BODE's notation has been used.

The reductions from the Mean to the Apparent Places of the Stars contained in WOLFER's *Tabulæ Reductionum* have been derived from that work; except that generally the proper motions derived from the authorities above referred to have been employed, and for Polaris $-0^s.07\,\tau^2$ has been applied, and the term depending on ☾ − Γ' omitted.

The reductions of the remaining 154 stars have been taken from tables similar to those of WOLFER's. They include the terms of the formulæ on pages 260 and 503, so far as sensible, except those depending on the moon's longitude. The terms depending on 2 ☾ have, however, been applied to the four stars whose places are given for every day. The values of these terms for seven circumpolar stars, computed for 1870, are given in Table IV. of this Appendix.

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* PETERS' *Numerus Constans Nutationis*, p. 71.

† Ibid., pp. 66 and 71.

‡ STRUVE's *Constant de l'Aberration*, p. 47.

APPENDIX.

To the position of Sirius, as derived from Wolfers, (the correction of the "*Tabula Subsidiaria*" being omitted), have been applied the terms given by Auwers,[*]

$$q=+0^{s}.0647-0^{s}.000718\ (t-1860)+0^{s}.1510\cos\,(u+\ 1^\circ\ 6')$$
$$r=-0''.630\ -0''.00044\ \ (t-1860)+1''.445\ \ \sin\,(u+23^\circ\ 30')$$

in which u, the eccentric anomaly from the inferior apsis, is found by the formula

$$u-e\sin u=n\ (t-T),$$

from the elements

$T=1793.830$, passage through the inferior apsis,
$e=\ \ 0.6010$, the eccentricity,
$n=\ \ 7^\circ.28475$, mean annual motion in orbit,
$49^{y}.418$, period of revolution.

The Mean Places of such of the Moon-culminating Stars as are not found in the list of standard stars, have been taken in order of preference from the *Almanac Catalogue of Zodiacal Stars printed for the use of the American Ephemeris and Nautical Almanac*, *Washington*, 1864; *the Greenwich Twelve-Year Catalogue;* and the *Catalogue of the British Association.*

The Ephemeris of the Sun† is constructed from Hansen and Olufsen's *Tables du Soleil*, Copenhagen, 1853. The Sun's rectangular equatorial coördinates have been computed from the longitudes and latitudes by the following formulæ:

$$\begin{aligned}
X&=R\cos\lambda\\
Y&=R\sin\lambda\cos\omega-19.3\ R\,\beta\\
Z&=R\sin\lambda\sin\ \omega+44.5\ R\,\beta\\
X'&=X+Y\sec\omega\ \Delta\lambda\\
Y'&=Y-X\cos\omega\ \Delta\lambda+Z\,\Delta\omega-\ \ 9.4\ \tau\ R\sin\,(\odot+187^\circ)\\
Z'&=Z-X\sin\ \omega\ \Delta\lambda-Y\,\Delta\omega+21.7\ \tau\ R\sin\,(\odot+187^\circ)
\end{aligned}$$

in which λ, β and ω are referred to the equinox and ecliptic of the date; $\Delta\lambda$ is the reduction of longitude for precession and nutation from Jan. 0; $\Delta\omega$ the reduction of the mean to the apparent obliquity; τ the part of the year since Jan. 0; and the numerical coefficients are in units of the 7th place of decimals.

The mean equatorial Horizontal Parallax of the Sun, adopted from Prof. Newcomb's *Investigation of the Distance of the Sun and the Elements which depend on it*,‡ is 8″.848. The adopted Semidiameter of the Sun at the Earth's mean distance is 16′ 2″.

The Ephemeris of the Moon has been constructed from Peirce's *Tables of the Moon*, *2d edition*, Washington, 1865. They include the *Tables of the Moon's Parallax* constructed from Walker's and Adams's formulæ.

The Semidiameter of the Moon has been computed from the Moon's Horizontal Parallax by the formula,

$$S=.272274\ \pi+2''.5.$$

A semidiameter 2″.5 less is found to be better adapted for the computation of eclipses and occultations.

The Ephemeris of Mercury has been derived from the Tables of Prof. Winlock, which are based on the theory of Le Verrier, published in the Additions to the *Connaissance des Temps* for 1848.

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[*] *Astronomiche Nachrichten*, No. 1506.

† From Carlinis Tables before 1858.

‡ *Astronomical Observations made at the U. S. Naval Observatory*, *Washington*, 1865, Appendix II.

CONSTRUCTION OF THE ALMANAC.

The Ephemeris of Venus has been derived from manuscript Tables, constructed from those of Lindenau, in a form similar to that adopted for the Lunar Tables: applying Airy's Long Equation and the corrections proceeding from the discussion, by the method of Least Squares, of Mr. Hugh Breen's results contained in his paper on the *Corrections of* Lindenau's *Elements of the Orbit of Venus*, &c., published in the *Memoirs of the Royal Astronomical Society*, Vol. XVIII.; and adopting the secular variations of the elements from Le Verrier's *Memoir on the Determination of the Secular Inequalities of the Planets*, which appeared in the *Connaissance des Temps* for the year 1844. The following are the corresponding corrected elements, and annual variations for Washington, 1855.0:

$$\begin{aligned}
L &= 289^\circ\ 51'\ 53''.5 + 2106691''.706\,t. \\
\pi &= 129\ \ 32\ \ 59.6 + 49''.57459\,t. \\
\Omega &= 75\ \ 23\ \ 27.3 + 32''.88424\,t. \\
i &= 3\ \ 23\ \ 34.6 + \ 0''.04363\,t. \\
e &= 1410''.6847 - \ 0''.11157\,t. \\
n &= 2106641''.438 \\
a &= 0.7233323
\end{aligned}$$

The Ephemeris of Mars is derived from manuscript Tables constructed from Lindenau's Tables in the same manner as the Tables of Venus. Mr. Hugh Breen's results contained in his paper *On the Corrections of* Lindenau's *Elements of Mars*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XX., have also been discussed and applied; and Le Verrier's secular variations of the elements are likewise adopted. The following are the corresponding corrected elements, and annual variations for Washington, 1855.0:

$$\begin{aligned}
L &= 320^\circ\ 13'\ 33''.87 + 689101''.1527\,t. \\
\pi &= 333\ \ 23\ \ 17.84 + 65''.9990\,t. \\
\Omega &= 48\ \ 25\ \ 55.29 + 27''.6997\,t. \\
i &= 1\ \ 51\ \ \ 2.20 - \ 0''.02141\,t. \\
e &= 19238''.75 \ + \ 0''.18549\,t. \\
n &= 689050''.8927 \\
a &= 1.5236915
\end{aligned}$$

The Ephemeris of Jupiter is derived from manuscript Tables constructed from Bouvard's Tables, with such changes as were required to make them correspond more nearly to the formulæ.

The Ephemeris of Saturn is derived from Bouvard's Tables. The perturbations produced by Jupiter, and the change of the Great Inequality since 1840, have been increased by $\frac{1}{50}$ of their value. Adams's Table in the *British Nautical Almanac* for 1851 has been substituted for Bouvard's Table XLII. The following corrections of the elements for 1855.0 have also been introduced:

corr. mean long. $= + \ 4''.9$
corr. long. of node $= - 143''.0$
corr. inclination $= - \ 5''.7 + 0''.0149\,t.$

The Ephemeris of Uranus is derived from the elliptical portion of Bouvard's Tables, with Le Verrier's corrections and perturbations caused by Jupiter and Saturn, contained in his *Recherches sur les Mouvements de la Planète Herschel* (*dite Uranus*), published in the *Connaissance des Temps* for 1849, and also Peirce's corrections and perturbations arising from the influence of Neptune.

The Ephemeris of Neptune is derived from Prof. Newcomb's *Tables of Neptune*, Washington, 1866.

APPENDIX.

The eclipses and elongations of Jupiter's Satellites are computed from Damoiseau's Tables.

The semidiameters of the Planets are computed from the following values:

	Semidiameter.	Log Dist.	Authority.
Mercury	3″.34	0.00	Le Verrier, *Theory of Mercury.*
Venus	8.546 ± 0.086	0.00	Peirce, from the Washington Observations of 1845 and 1846, made with the mural circle.
Mars (polar)	2.842 ± 0.057	0.25	
Jupiter (polar)*	18.78 ± 0.067	0.70	
Saturn (polar)	8.77 ± 0.039	0.95	
Uranus	1.68 ± 0.3	1.30	
Jupiter (equat.)	20.00	0.70	
Saturn (equat.)	9.38	0.95	

To correspond to the apparent semidiameters observed with the Washington mural circle, all the semidiameters, except those of Mercury, computed from these values, must be increased by the constant quantity, 0″.57.

The apparent elements of Saturn's Rings are computed from Bessel's data, except those for Bond's dusky ring.

The Tables for the eclipses of the sun are adapted to the modification of Bessel's formulæ, suggested by T. Henry Safford, jr. The formulæ are given in Peirce's *Spherical Astronomy* and Chauvenet's *Spherical and Practical Astronomy*, Vol. I.

The elements for occultations of stars by the moon are adapted to Bessel's method in the *Astronomische Nachrichten*, Vol. VII., and the *Berliner Astronomisches Jahrbuch* for 1831. The formulæ are also to be found in Chauvenet's *Astronomy.*

The intervals of original computation have in all cases been made sufficiently small to authorize the use of the differences as a check of the accuracy of the work. The results have also been tested, in various portions, by means of duplicate computations. The proofs from the stereotype plates have been thoroughly examined by an independent series of differences. And it is believed that, in every respect, that system has been adopted in which accuracy was most likely to be secured.

The principal computations of the Ephemeris have been distributed in the following manner:

The Sun has been computed by Mr. Eastwood; the Ephemeris of the Moon and the Lunar Distances by Professor Runkle and Mr. Wright. Mercury has been computed by Mr. Austin, Venus chiefly by Miss Mitchell, Mars by Mr. Oliver, Jupiter by Professor Kendall, Saturn by Professor Van Vleck, Uranus by Mr. Ferrel, and Neptune by Mr. Wiessner. The Fixed Stars and the General Constants for Reduction have been computed by Mr. G. W. Hill, and the Occultations by Mr. Downes, assisted by Mr. Wiessner and Mr. Loomis. The Eclipses have been computed and the Charts projected by Mr. Hill. The Table of Positions of Observatories, orginally compiled by Dr. B. A. Gould, was revised by him for the volume for 1870. The results of the most recent determinations have been incorporated.

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* In the volumes for 1858 to 1869 inclusive 19″.19, given erroneously in the Appendix for 1855, has been used for the Washington Ephemeris.

CONSTRUCTION OF THE ALMANAC

MEAN PLACES FOR 1860.0, AND PROPER MOTIONS OF STANDARD STARS OF THIS EPHEMERIS, WHICH ARE NOT CONTAINED IN GOULD'S STANDARD PLACES.

Name.	Mean R. A.	Proper Motion.	Mean Dec.	Proper motion.
	h m s	s	° ′ ″	″
β Hydri	0 18 19.936	+0.7080	−78 2 36.91	+0.2590
α Eridani	1 32 29.669	+0.0028	−57 56 55.77	−0.0115
α Argus	6 20 50.780	+0.0010	−52 37 13.74	+0.0002
α Canis Majoris . . .	6 38 58.677	−0.0358	−16 31 36.16	−1.2092
α Geminorum	7 25 39.450	−0.0148	+32 11 29.45	−0.0766
α Canis Minoris . . .	7 31 58.363	−0.0455	+ 5 34 50.54	−1.0425
ι Argus	9 13 20.530	−0.0090	−58 41 17.84	+0.0709
η Argus	10 39 38.279	−0.0021	−58 56 55.25	+0.0917
β Chamæleontis . . .	12 10 12.636	−0.0446	−78 32 5.54	−0.0087
α^1 Crucis	12 18 50.086	−0.0233	−62 19 18.83	+0.0511
β Centauri	13 53 58.685	−0.0103	−59 41 42.79	−0.0692
α^2 Centauri	14 30 7.977	−0.4714	−60 15 8.84	+0.8232
β^1 Scorpii	15 57 18.070	−0.0018	−19 25 7.65	−0.0189
η Draconis	16 22 6.135	+0.0024	+61 49 54.59	+0.0679
α Trianguli Australis .	16 33 52.787	−0.0004	−68 45 50.10	−0.0796
β Draconis	17 27 16.217	−0.0027	+52 24 22.98	−0.0041
σ Octantis	17 48 6.608	0.0000	−89 16 40.42	0.0000
γ Draconis	17 53 21.468	+0.0018	+51 30 24.48	−0.0369
α Pavonis	20 14 33.200	+0.0037	−57 10 44.68	−0.0306
61^1 Cygni	21 0 37.437	+0.3516	+38 3 47.00	+3.2420
α Cephei	21 15 14.138	+0.0217	+61 59 34.99	+0.0020
α Gruis	21 59 23.576	+0.0108	−47 38 11.73	−0.1810

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APPENDIX.

REDUCTIONS OF THE MEAN PLACES OF THE STARS IN THE AMERICAN EPHEMERIS, 1865-69, TO THOSE ADOPTED IN THE EPHEMERIS FOR 1870.

[t is reckoned from 1865.0.]

IN RIGHT ASCENSION.

	s	s		s	s
β Hydri	—0.221	—0.0188t	α² Centauri	—0.025	—0.0020t
ε Piscium	—0.050	—0.0010t	β¹ Scorpii	+0.042	+0.0002t
α Ursæ Minoris	+1.113	+0.0512t	η Draconis	—0.519	—0.0196t
η Piscium	+0.005	—0.0005t	ζ Ophiuchi	—0.023	—0.0003t
α Persei	—0.022	—0.0002t	β Draconis	+0.024	+0.0003t
α Columbæ	—0.033	—0.0013t	δ Ursæ Minoris	—0.084	—0.0022t
51 Cephei	+0.483	+0.0332t	*d* Sagittarii	—0.050	—0.0010t
μ Leonis	+0.027	+0.0007t	τ Aquilæ	—0.073	—0.0013t
l Leonis	+0.040	0.0000t	λ Ursæ Minoris	+0.537	—0.0048t
ο Virginis	—0.049	—0.0009t	Groombridge 3241	+0.210	+0.0050t
β Chamæleontis	—0.007	—0.0002t	61¹ Cygni	+0.287	+0.0138t
α¹ Crucis	—0.005	—0.0004t	1 Pegasi	—0.010	—0.0010t
β Corvi	+0.079	+0.0029t	μ Capricorni	—0.035	—0.0015t
β Centauri	—0.003	0.0000t	λ Aquarii	+0.025	+0.0005t

IN DECLINATION.

	"	"		"	"
α Andromedæ	—0.23	—.005t	γ Geminorum	+0.76	+.013t
γ Pegasi	+0.38	+.012t	51 Cephei	—0.40	—.048t
β Hydri	—0.03	.000t	ε Canis Majoris	+1.80	+.024t
α Cassiopeæ	—0.48	—.006t	δ Canis Majoris	+0.94	+.027t
β Ceti	+1.11	+.019t	δ Geminorum	+1.02	+.029t
ε Piscium	+0.61	+.025t	β Geminorum	+0.63	+.017t
α Ursæ Minoris	—0.15	—.005t	φ Geminorum	+1.28	+.036t
θ¹ Ceti	+1.42	+.027t	15 Argus	+0.89	+.013t
η Piscium	+1.05	+.018t	ε Hydræ	+0.62	+.018t
ο Piscium	+0.41	+.028t	ι Ursæ Majoris	—0.13	+.014t
β Arietis	+0.74	+.016t	κ Cancri	+1.16	+.031t
α Arietis	+0.11	+.003t	α Hydræ	—0.15	+.006t
ξ¹ Ceti	—0.20	+.029t	θ Ursæ Majoris	+0.47	+.015t
γ Ceti	+1.73	+.037t	ε Leonis	+0.83	+.014t
α Ceti	+0.40	+.014t	μ Leonis	+0.34	+.014t
ζ Arietis	+0.47	+.013t	α Leonis	+0.62	+.011t
α Persei	—0.04	+.001t	γ¹ Leonis	+1.50	+.031t
δ Persei	—0.35	.000t	ρ Leonis	+1.07	+.031t
η Tauri	+0.29	+.012t	*l* Leonis	+1.34	+.019t
ζ Persei	+0.17	+.026t	α Ursæ Majoris	+0.19	+.006t
γ¹ Eridani	+1.44	+.031t	δ Leonis	+1.06	+.015t
γ Tauri	+0.86	+.028t	δ Crateris	+1.57	+.016t
ε Tauri	+1.27	+.022t	τ Leonis	+0.58	+.011t
α Tauri	—0.08	—.001t	υ Leonis	+0.74	+.023t
ι Aurigæ	+0.73	+.008t	β Leonis	+0.37	+.010t
11 Orionis	+0.29	+.019t	γ Ursæ Majoris	+0.10	+.005t
α Aurigæ	—0.38	—.004t	ο Virginis	+1.35	+.030t
β Orionis	+0.60	+.016t	η Virginis	+0.65	+.018t
β Tauri	+0.61	+.020t	β Corvi	+2.32	+.033t
δ Orionis	+0.88	+.030t	12 Can. Venat.	+0.26	+.005t
α Leporis	+0.74	+.026t	θ Virginis	+0.83	+.020t
ε Orionis	+0.73	+.014t	α Virginis	+0.56	+.016t
α Columbæ	—0.76	—.022t	ζ Virginis	+0.70	+.008t
α Orionis	+0.79	+.017t	η Ursæ Majoris	—0.22	—.002t
μ Geminorum	+1.35	+.033t	η Bootis	+1.21	+.027t

REDUCTIONS OF THE MEAN PLACES OF THE STARS IN THE AMERICAN EPHEMERIS, 1865–69, TO THOSE ADOPTED IN THE EPHEMERIS FOR 1870.

[t is reckoned from 1865.0.]

IN DECLINATION.

	″	″		″	″
α Bootis	+0.09	$+.005t$	σ Sagittarii	+0.73	$+.018t$
θ Bootis	+0.85	$+.015t$	ζ Aquilæ	+0.24	$+.015t$
α^2 Centauri	—0.10	$-.012t$	*d* Sagittarii	+3.84	$+.030t$
ε Bootis	+0.97	$+.020t$	δ Aquilæ	+0.67	$-.007t$
α^2 Libræ	+0.25	$.000t$	κ Aquilæ	+1.61	$+.022t$
β Bootis	+1.06	$+.021t$	γ Aqnilæ	+0.04	$.000t$
β Libræ	+1.20	$+.006t$	α Aquilæ	+0.01	$-.003t$
μ^1 Bootis	+0.48	$+.009t$	β Aquilæ	+0.53	$+.014t$
α Coronæ Borealis	—0.39	$-.012t$	τ Aquilæ	+0.97	$+.009t$
α Serpentis	+0.11	$.000t$	λ Ursæ Minoris	—0.52	$-.014t$
ε Serpentis	+0.63	$+.010t$	α^2 Capricorni	+0.26	$+.006t$
ε Coronæ Borealis	+1.16	$+.016t$	π Capricorni	+0.53	$-.050t$
δ Scorpii	+1.60	$+.012t$	ε Delphini	+0.94	$-.020t$
β^1 Scorpii	+0.29	$+.001t$	α Cygni	—0.24	$-.005t$
δ Ophiuchi	+1.45	$+.002t$	μ Aquarii	+0.95	$+.020t$
τ Herculis	+0.32	$-.004t$	ν Cygni	+0.97	$+.003t$
α Scorpii	—0.21	$-.004t$	61^1 Cygni	+0.88	$+.025t$
η Draconis	—0.70	$-.012t$	ζ Cygni	+0.77	$+.014t$
ζ Ophiuchi	+1.11	$+.017t$	1 Pegasi	+0.03	$-.003t$
η Herculis	+0.75	$+.006t$	β Aquarii	+1.10	$+.008t$
κ Ophiuchi	+1.25	$+.003t$	ξ Aquarii	+0.82	$+.023t$
d Herculis	+0.70	$+.001t$	ε Pegasi	+0.70	$+.008t$
α^1 Herculis	+0.05	$-.002t$	μ Capricorni	+1.73	$+.011t$
44 Ophiuchi	+2.09	$+.035t$	α Aquarii	+0.18	$-.002t$
β Draconis	—0.06	$-.004t$	θ Aquarii	—0.43	$+.019t$
α Ophiuchi	—0.22	$-.011t$	π Aquarii	+1.04	$+.012t$
μ Herculis	+1.46	$+.017t$	η Aquarii	+0.53	$+.010t$
γ^2 Sagittarii	+0.92	$+.010t$	ζ Pegasi	+0.65	$+.007t$
μ^1 Sagittarii	+1.08	$+.013t$	λ Aquarii	+1.08	$+.023t$
δ Ursæ Minoris	+1.01	$+.024t$	α Piscis Australis	+0.66	$+.010t$
η Serpentis	+1.60	$+.010t$	α Pegasi	—0.30	$-.011t$
1 Aquilæ	+1.85	$+.020t$	θ Piscium	+1.86	$+.034t$
α Lyræ	—0.33	$-.002t$	ι Piscium	+0.89	$+.014t$
β Lyræ	+0.92	$+.017t$	ω Piscium	+0.94	$+\,028t$

TABLE I.

TABLE SHOWING THE CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING TO A CORRECTED LUNAR DISTANCE.

Difference of the Proportional Logarithms in the Ephemeris.

Approximate Interval.		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
0 20	2 40	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6
0 30	2 30	0	1	1	1	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9
0 40	2 20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	10	11	11
0 50	2 10	1	1	2	2	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13
1 0	2 0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	14	14
1 10	1 50	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15
1 20	1 40	1	1	2	3	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	15	16
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16

Difference of the Proportional Logarithms in the Ephemeris.

		54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7	7
0 20	2 40	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12	13
0 30	2 30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	16	16	16	17	17	17	18
0 40	2 20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21	22	22
0 50	2 10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	22	23	23	24	24	25	26
1 0	2 0	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28	28
1 10	1 50	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	30	30
1 20	1 40	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31	31
1 30	1 30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	31	32

Difference of the Proportional Logarithms in the Ephemeris.

		104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9	9
0 20	2 40	13	13	13	14	14	14	14	15	15	15	15	15	16	16	16	16	17	17
0 30	2 30	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	24	24
0 40	2 20	22	23	23	24	24	25	25	25	26	26	27	27	28	28	28	29	29	30
0 50	2 10	26	26	27	27	28	29	29	29	30	30	31	31	32	32	33	33	34	34
1 0	2 0	29	29	30	30	31	31	32	33	33	34	34	35	35	36	37	37	38	38
1 10	1 50	31	31	32	32	33	34	34	35	35	36	37	37	38	38	39	40	40	41
1 20	1 40	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41	42	42
1 30	1 30	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42	42	43

The Correction is to be *added* to the approximate Greenwich Time when the Proportional Logarithms in the Ephemeris are *decreasing*, and *subtracted* when they are *increasing*.

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal.	$0^{\text{h.}}$	$1^{\text{h.}}$	$2^{\text{h.}}$	$3^{\text{h.}}$	$4^{\text{h.}}$	$5^{\text{h.}}$	$6^{\text{h.}}$	$7^{\text{h.}}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	0 0.000	0 9.830	0 19.659	0 29.489	0 39.318	0 49.148	0 58.977	1 8.807		
1	0 0.164	0 9.993	0 19.823	0 29.653	0 39.482	0 49.312	0 59.141	1 8.971	1	0.003
2	0 0.328	0 10.157	0 19.987	0 29.816	0 39.646	0 49.475	0 59.305	1 9.135	2	.005
3	0 0.491	0 10.321	0 20.151	0 29.980	0 39.810	0 49.639	0 59.469	1 9.298	3	.008
4	0 0.655	0 10.485	0 20.314	0 30.144	0 39.974	0 49.803	0 59.633	1 9.462	4	.011
5	0 0.819	0 10.649	0 20.478	0 30.308	0 40.137	0 49.967	0 59.796	1 9.626	5	.014
6	0 0.983	0 10.813	0 20.642	0 30.472	0 40.301	0 50.131	0 59.960	1 9.790	6	.016
7	0 1.147	0 10.976	0 20.806	0 30.635	0 40.465	0 50.295	1 0.124	1 9.954	7	.019
8	0 1.311	0 11.140	0 20.970	0 30.799	0 40.629	0 50.458	1 0.288	1 10.118	8	.022
9	0 1.474	0 11.304	0 21.134	0 30.963	0 40.793	0 50.622	1 0.452	1 10.281	9	.025
10	0 1.638	0 11.468	0 21.297	0 31.127	0 40.956	0 50.786	1 0.616	1 10.445	10	.027
11	0 1.802	0 11.632	0 21.461	0 31.291	0 41.120	0 50.950	1 0.779	1 10.609	11	.030
12	0 1.966	0 11.795	0 21.625	0 31.455	0 41.284	0 51.114	1 0.943	1 10.773	12	.033
13	0 2.130	0 11.959	0 21.789	0 31.618	0 41.448	0 51.278	1 1.107	1 10.937	13	.035
14	0 2.294	0 12.123	0 21.953	0 31.782	0 41.612	0 51.441	1 1.271	1 11.100	14	.038
15	0 2.457	0 12.287	0 22.117	0 31.946	0 41.776	0 51.605	1 1.435	1 11.264	15	.041
16	0 2.621	0 12.451	0 22.280	0 32.110	0 41.939	0 51.769	1 1.599	1 11.428	16	.044
17	0 2.785	0 12.615	0 22.444	0 32.274	0 42.103	0 51.933	1 1.762	1 11.592	17	.046
18	0 2.949	0 12.778	0 22.608	0 32.438	0 42.267	0 52.097	1 1.926	1 11.756	18	.049
19	0 3.113	0 12.942	0 22.772	0 32.601	0 42.431	0 52.260	1 2.090	1 11.920	19	.052
20	0 3.277	0 13.106	0 22.936	0 32.765	0 42.595	0 52.424	1 2.254	1 12.083	20	.055
21	0 3.440	0 13.270	0 23.099	0 32.929	0 42.759	0 52.588	1 2.418	1 12.247	21	.057
22	0 3.604	0 13.434	0 23.263	0 33.093	0 42.922	0 52.752	1 2.582	1 12.411	22	.060
23	0 3.768	0 13.598	0 23.427	0 33.257	0 43.086	0 52.916	1 2.745	1 12.575	23	.063
24	0 3.932	0 13.761	0 23.591	0 33.420	0 43.250	0 53.080	1 2.909	1 12.739	24	.066
25	0 4.096	0 13.925	0 23.755	0 33.584	0 43.414	0 53.243	1 3.073	1 12.903	25	.068
26	0 4.259	0 14.089	0 23.919	0 33.748	0 43.578	0 53.407	1 3.237	1 13.066	26	.071
27	0 4.423	0 14.253	0 24.082	0 33.912	0 43.742	0 53.571	1 3.401	1 13.230	27	.074
28	0 4.587	0 14.417	0 24.246	0 34.076	0 43.905	0 53.735	1 3.564	1 13.394	28	.076
29	0 4.751	0 14.581	0 24.410	0 34.240	0 44.069	0 53.899	1 3.728	1 13.558	29	.079
30	0 4.915	0 14.744	0 24.574	0 34.403	0 44.233	0 54.063	1 3.892	1 13.722	30	.082
31	0 5.079	0 14.908	0 24.738	0 34.567	0 44.397	0 54.226	1 4.056	1 13.886	31	.085
32	0 5.242	0 15.072	0 24.902	0 34.731	0 44.561	0 54.390	1 4.220	1 14.049	32	.087
33	0 5.406	0 15.236	0 25.065	0 34.895	0 44.724	0 54.554	1 4.384	1 14.213	33	.090
34	0 5.570	0 15.400	0 25.229	0 35.059	0 44.888	0 54.718	1 4.547	1 14.377	34	.093
35	0 5.734	0 15.563	0 25.393	0 35.223	0 45.052	0 54.882	1 4.711	1 14.541	35	.096
36	0 5.898	0 15.727	0 25.557	0 35.386	0 45.216	0 55.046	1 4.875	1 14.705	36	.098
37	0 6.062	0 15.891	0 25.721	0 35.550	0 45.380	0 55.209	1 5.039	1 14.868	37	.101
38	0 6.225	0 16.055	0 25.885	0 35.714	0 45.544	0 55.373	1 5.203	1 15.032	38	.104
39	0 6.389	0 16.219	0 26.048	0 35.878	0 45.707	0 55.537	1 5.367	1 15.196	39	.106
40	0 6.553	0 16.383	0 26.212	0 36.042	0 45.871	0 55.701	1 5.530	1 15.360	40	.109
41	0 6.717	0 16.546	0 26.376	0 36.206	0 46.035	0 55.865	1 5.694	1 15.524	41	.112
42	0 6.881	0 16.710	0 26.540	0 36.369	0 46.199	0 56.028	1 5.858	1 15.688	42	.115
43	0 7.045	0 16.874	0 26.704	0 36.533	0 46.363	0 56.192	1 6.022	1 15.851	43	.117
44	0 7.208	0 17.038	0 26.867	0 36.697	0 46.527	0 56.356	1 6.186	1 16.015	44	.120
45	0 7.372	0 17.202	0 27.031	0 36.861	0 46.690	0 56.520	1 6.350	1 16.179	45	.123
46	0 7.536	0 17.366	0 27.195	0 37.025	0 46.854	0 56.684	1 6.513	1 16.343	46	.126
47	0 7.700	0 17.529	0 27.359	0 37.188	0 47.018	0 56.848	1 6.677	1 16.507	47	.128
48	0 7.864	0 17.693	0 27.523	0 37.352	0 47.182	0 57.011	1 6.841	1 16.671	48	.131
49	0 8.027	0 17.857	0 27.687	0 37.516	0 47.346	0 57.175	1 7.005	1 16.834	49	.134
50	0 8.191	0 18.021	0 27.850	0 37.680	0 47.510	0 57.339	1 7.169	1 16.998	50	.137
51	0 8.355	0 18.185	0 28.014	0 37.844	0 47.673	0 57.503	1 7.332	1 17.162	51	.139
52	0 8.519	0 18.349	0 28.178	0 38.008	0 47.837	0 57.667	1 7.496	1 17.326	52	.142
53	0 8.683	0 18.512	0 28.342	0 38.171	0 48.001	0 57.831	1 7.660	1 17.490	53	.145
54	0 8.847	0 18.676	0 28.506	0 38.335	0 48.165	0 57.994	1 7.824	1 17.654	54	.147
55	0 9.010	0 18.840	0 28.670	0 38.499	0 48.329	0 58.158	1 7.988	1 17.817	55	.150
56	0 9.174	0 19.004	0 28.833	0 38.663	0 48.492	0 58.322	1 8.152	1 17.981	56	.153
57	0 9.338	0 19.168	0 28.997	0 38.827	0 48.656	0 58.486	1 8.315	1 18.145	57	.156
58	0 9.502	0 19.331	0 29.161	0 38.991	0 48.820	0 58.650	1 8.479	1 18.309	58	.158
59	0 9.666	0 19.495	0 29.325	0 39.154	0 48.984	0 58.814	1 8.643	1 18.473	59	0.161

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	1 18.636	1 28.466	1 38.296	1 48.125	1 57.955	2 7.784	2 17.614	2 27.443		
1	1 18.800	1 28.630	1 38.459	1 48.289	1 58.119	2 7.948	2 17.778	2 27.607	1	0.003
2	1 18.964	1 28.794	1 38.623	1 48.453	1 58.282	2 8.112	2 17.941	2 27.771	2	.005
3	1 19.128	1 28.958	1 38.787	1 48.617	1 58.446	2 8.276	2 18.105	2 27.935	3	.008
4	1 19.292	1 29.121	1 38.951	1 48.780	1 58.610	2 8.440	2 18.269	2 28.099	4	.011
5	1 19.456	1 29.285	1 39.115	1 48.944	1 58.774	2 8.603	2 18.433	2 28.263	5	.014
6	1 19.619	1 29.449	1 39.279	1 49.108	1 58.938	2 8.767	2 18.597	2 28.426	6	.016
7	1 19.783	1 29.613	1 39.442	1 49.272	1 59.101	2 8.931	2 18.761	2 28.590	7	.019
8	1 19.947	1 29.777	1 39.606	1 49.436	1 59.265	2 9.095	2 18.924	2 28.754	8	.022
9	1 20.111	1 29.940	1 39.770	1 49.600	1 59.429	2 9.259	2 19.088	2 28.918	9	.025
10	1 20.275	1 30.104	1 39.934	1 49.763	1 59.593	2 9.423	2 19.252	2 29.082	10	.027
11	1 20.439	1 30.268	1 40.098	1 49.927	1 59.757	2 9.586	2 19.416	2 29.245	11	.030
12	1 20.602	1 30.432	1 40.261	1 50.091	1 59.921	2 9.750	2 19.580	2 29.409	12	.033
13	1 20.766	1 30.596	1 40.425	1 50.255	2 0.084	2 9.914	2 19.744	2 29.573	13	.035
14	1 20.930	1 30.760	1 40.589	1 50.419	2 0.248	2 10.078	2 19.907	2 29.737	14	.038
15	1 21.094	1 30.923	1 40.753	1 50.583	2 0.412	2 10.242	2 20.071	2 29.901	15	.041
16	1 21.258	1 31.087	1 40.917	1 50.746	2 0.576	2 10.405	2 20.235	2 30.065	16	.044
17	1 21.422	1 31.251	1 41.081	1 50.910	2 0.740	2 10.569	2 20.399	2 30.228	17	.046
18	1 21.585	1 31.415	1 41.244	1 51.074	2 0.904	2 10.733	2 20.563	2 30.392	18	.049
19	1 21.749	1 31.579	1 41.408	1 51.238	2 1.067	2 10.897	2 20.727	2 30.556	19	.052
20	1 21.913	1 31.743	1 41.572	1 51.402	2 1.231	2 11.061	2 20.890	2 30.720	20	.055
21	1 22.077	1 31.906	1 41.736	1 51.565	2 1.395	2 11.225	2 21.054	2 30.884	21	.057
22	1 22.241	1 32.070	1 41.900	1 51.729	2 1.559	2 11.388	2 21.218	2 31.048	22	.060
23	1 22.404	1 32.234	1 42.064	1 51.893	2 1.723	2 11.552	2 21.382	2 31.211	23	.063
24	1 22.568	1 32.398	1 42.227	1 52.057	2 1.887	2 11.716	2 21.546	2 31.375	24	.066
25	1 22.732	1 32.562	1 42.391	1 52.221	2 2.050	2 11.880	2 21.709	2 31.539	25	.068
26	1 22.896	1 32.726	1 42.555	1 52.385	2 2.214	2 12.044	2 21.873	2 31.703	26	.071
27	1 23.060	1 32.889	1 42.719	1 52.548	2 2.378	2 12.208	2 22.037	2 31.867	27	.074
28	1 23.224	1 33.053	1 42.883	1 52.712	2 2.542	2 12.371	2 22.201	2 32.031	28	.076
29	1 23.387	1 33.217	1 43.047	1 52.876	2 2.706	2 12.535	2 22.365	2 32.194	29	.079
30	1 23.551	1 33.381	1 43.210	1 53.040	2 2.869	2 12.699	2 22.529	2 32.358	30	.082
31	1 23.715	1 33.545	1 43.374	1 53.204	2 3.033	2 12.863	2 22.692	2 32.522	31	.085
32	1 23.879	1 33.708	1 43.538	1 53.368	2 3.197	2 13.027	2 22.856	2 32.686	32	.087
33	1 24.043	1 33.872	1 43.702	1 53.531	2 3.361	2 13.191	2 23.020	2 32.850	33	.090
34	1 24.207	1 34.036	1 43.866	1 53.695	2 3.525	2 13.354	2 23.184	2 33.013	34	.093
35	1 24.370	1 34.200	1 44.029	1 53.859	2 3.689	2 13.518	2 23.348	2 33.177	35	.096
36	1 24.534	1 34.364	1 44.193	1 54.023	2 3.852	2 13.682	2 23.512	2 33.341	36	.098
37	1 24.698	1 34.528	1 44.357	1 54.187	2 4.016	2 13.846	2 23.675	2 33.505	37	.101
38	1 24.862	1 34.691	1 44.521	1 54.351	2 4.180	2 14.010	2 23.839	2 33.669	38	.104
39	1 25.026	1 34.855	1 44.685	1 54.514	2 4.344	2 14.173	2 24.003	2 33.833	39	.106
40	1 25.190	1 35.019	1 44.849	1 54.678	2 4.508	2 14.337	2 24.167	2 33.996	40	.109
41	1 25.353	1 35.183	1 45.012	1 54.842	2 4.672	2 14.501	2 24.331	2 34.160	41	.112
42	1 25.517	1 35.347	1 45.176	1 55.006	2 4.835	2 14.665	2 24.495	2 34.324	42	.115
43	1 25.681	1 35.511	1 45.340	1 55.170	2 4.999	2 14.829	2 24.658	2 34.488	43	.117
44	1 25.845	1 35.674	1 45.504	1 55.333	2 5.163	2 14.993	2 24.822	2 34.652	44	.120
45	1 26.009	1 35.838	1 45.668	1 55.497	2 5.327	2 15.156	2 24.986	2 34.816	45	.123
46	1 26.172	1 36.002	1 45.832	1 55.661	2 5.491	2 15.320	2 25.150	2 34.979	46	.126
47	1 26.336	1 36.166	1 45.995	1 55.825	2 5.655	2 15.484	2 25.314	2 35.143	47	.128
48	1 26.500	1 36.330	1 46.159	1 55.989	2 5.818	2 15.648	2 25.477	2 35.307	48	.131
49	1 26.664	1 36.493	1 46.323	1 56.153	2 5.982	2 15.812	2 25.641	2 35.471	49	.134
50	1 26.828	1 36.657	1 46.487	1 56.316	2 6.146	2 15.976	2 25.805	2 35.635	50	.137
51	1 26.992	1 36.821	1 46.651	1 56.480	2 6.310	2 16.139	2 25.969	2 35.798	51	.139
52	1 27.155	1 36.985	1 46.815	1 56.644	2 6.474	2 16.303	2 26.133	2 35.962	52	.142
53	1 27.319	1 37.149	1 46.978	1 56.808	2 6.637	2 16.467	2 26.297	2 36.126	53	.145
54	1 27.483	1 37.313	1 47.142	1 56.972	2 6.801	2 16.631	2 26.460	2 36.290	54	.147
55	1 27.647	1 37.476	1 47.306	1 57.136	2 6.965	2 16.795	2 26.624	2 36.454	55	.150
56	1 27.811	1 37.640	1 47.470	1 57.299	2 7.129	2 16.959	2 26.788	2 36.618	56	.153
57	1 27.975	1 37.804	1 47.634	1 57.463	2 7.293	2 17.122	2 26.952	2 36.781	57	.156
58	1 28.138	1 37.968	1 47.797	1 57.627	2 7.457	2 17.286	2 27.116	2 36.945	58	.158
59	1 28.302	1 38.132	1 47.961	1 57.791	2 7.620	2 17.450	2 27.280	2 37.109	59	0.161

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	2 37.273	2 47.102	2 56.932	3 6.762	3 16.591	3 26.421	3 36.250	3 46.080		
1	2 37.437	2 47.266	2 57.096	3 6.925	3 16.755	3 26.585	3 36.414	3 46.244	1	0.003
2	2 37.601	2 47.430	2 57.260	3 7.089	3 16.919	3 26.748	3 36.578	3 46.407	2	.005
3	2 37.764	2 47.594	2 57.424	3 7.253	3 17.083	3 26.912	3 36.742	3 46.571	3	.008
4	2 37.928	2 47.758	2 57.587	3 7.417	3 17.246	3 27.076	3 36.906	3 46.735	4	.011
5	2 38.092	2 47.922	2 57.751	3 7.581	3 17.410	3 27.240	3 37.069	3 46.899	5	.014
6	2 38.256	2 48.085	2 57.915	3 7.745	3 17.574	3 27.404	3 37.233	3 47.063	6	.016
7	2 38.420	2 48.249	2 58.079	3 7.908	3 17.738	3 27.568	3 37.397	3 47.227	7	.019
8	2 38.584	2 48.413	2 58.243	3 8.072	3 17.902	3 27.731	3 37.561	3 47.390	8	.022
9	2 38.747	2 48.577	2 58.406	3 8.236	3 18.066	3 27.895	3 37.725	3 47.554	9	.025
10	2 38.911	2 48.741	2 58.570	3 8.400	3 18.229	3 28.059	3 37.889	3 47.718	10	.027
11	2 39.075	2 48.905	2 58.734	3 8.564	3 18.393	3 28.223	3 38.052	3 47.882	11	.030
12	2 39.239	2 49.068	2 58.898	3 8.728	3 18.557	3 28.387	3 38.216	3 48.046	12	.033
13	2 39.403	2 49.232	2 59.062	3 8.891	3 18.721	3 28.550	3 38.380	3 48.210	13	.035
14	2 39.566	2 49.396	2 59.226	3 9.055	3 18.885	3 28.714	3 38.544	3 48.373	14	.038
15	2 39.730	2 49.560	2 59.389	3 9.219	3 19.049	3 28.878	3 38.708	3 48.537	15	.041
16	2 39.894	2 49.724	2 59.553	3 9.383	3 19.212	3 29.042	3 38.871	3 48.701	16	.044
17	2 40.058	2 49.888	2 59.717	3 9.547	3 19.376	3 29.206	3 39.035	3 48.865	17	.046
18	2 40.222	2 50.051	2 59.881	3 9.710	3 19.540	3 29.370	3 39.199	3 49.029	18	.049
19	2 40.386	2 50.215	3 0.045	3 9.874	3 19.704	3 29.533	3 39.363	3 49.193	19	.052
20	2 40.549	2 50.379	3 0.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	20	.055
21	2 40.713	2 50.543	3 0.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	21	.057
22	2 40.877	2 50.707	3 0.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	22	.060
23	2 41.041	2 50.870	3 0.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	23	.063
24	2 41.205	2 51.034	3 0.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	24	.066
25	2 41.369	2 51.198	3 1.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	25	.068
26	2 41.532	2 51.362	3 1.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	26	.071
27	2 41.696	2 51.526	3 1.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	27	.074
28	2 41.860	2 51.690	3 1.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	28	.076
29	2 42.024	2 51.853	3 1.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	29	.079
30	2 42.188	2 52.017	3 1.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	30	.082
31	2 42.352	2 52.181	3 2.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	31	.085
32	2 42.515	2 52.345	3 2.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	32	.087
33	2 42.679	2 52.509	3 2.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	33	.090
34	2 42.843	2 52.673	3 2.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	34	.093
35	2 43.007	2 52.836	3 2.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	35	.096
36	2 43.171	2 53.000	3 2.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	36	.098
37	2 43.334	2 53.164	3 2.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	37	.101
38	2 43.498	2 53.328	3 3.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	38	.104
39	2 43.662	2 53.492	3 3.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	39	.106
40	2 43.826	2 53.656	3 3.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	40	.109
41	2 43.990	2 53.819	3 3.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	41	.112
42	2 44.154	2 53.983	3 3.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	42	.115
43	2 44.317	2 54 147	3 3.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	43	.117
44	2 44.481	2 54.311	3 4.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	44	.120
45	2 44.645	2 54.475	3 4.304	3 14.134	3 23.963	3 33.793	3 43.622	3 53.452	45	.123
46	2 44.809	2 54.638	3 4.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	46	.126
47	2 44.973	2 54.802	3 4.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	47	.128
48	2 45.137	2 54.966	3 4.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	48	.131
49	2 45.300	2 55.130	3 4.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	49	.134
50	2 45.464	2 55.294	3 5.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	50	.137
51	2 45.628	2 55.458	3 5.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	51	.139
52	2 45.792	2 55.621	3 5.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	52	.142
53	2 45.956	2 55.785	3 5.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	53	.145
54	2 46.120	2 55.949	3 5.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	54	.147
55	2 46.283	2 56.113	3 5.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	55	.150
56	2 46.447	2 56.277	3 6.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	56	.153
57	2 46.611	2 56.441	3 6.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	57	.156
58	2 46.775	2 56.604	3 6.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	58	.158
59	2 46.939	2 56.768	3 6.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	59	0.161

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	0h.		1h.		2h.		3h.		4h.		5h.		6h.		7h.		For Seconds.	
m	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s	s	s
0	0	0.000	0	9.856	0	19.713	0	29.569	0	39.426	0	49.282	0	59.139	1	8.995		
1	0	0.164	0	10.021	0	19.877	0	29.734	0	39.590	0	49.447	0	59.303	1	9.160	1	0.003
2	0	0.329	0	10.185	0	20.041	0	29.898	0	39.754	0	49.611	0	59.467	1	9.324	2	.005
3	0	0.493	0	10.349	0	20.206	0	30.062	0	39.919	0	49.775	0	59.632	1	9.488	3	.008
4	0	0.657	0	10.514	0	20.370	0	30.227	0	40.083	0	49.939	0	59.796	1	9.652	4	.011
5	0	0.821	0	10.678	0	20.534	0	30.391	0	40.247	0	50.104	0	59.969	1	9.817	5	.014
6	0	0.986	0	10.842	0	20.699	0	30.555	0	40.412	0	50.268	1	0.124	1	9.981	6	.016
7	0	1.150	0	11.006	0	20.863	0	30.719	0	40.576	0	50.432	1	0.289	1	10.145	7	.019
8	0	1.314	0	11.171	0	21.027	0	30.884	0	40.740	0	50.597	1	0.453	1	10.310	8	.022
9	0	1.478	0	11.335	0	21.191	0	31.048	0	40.904	0	50.761	1	0.617	1	10.474	9	.025
10	0	1.643	0	11.499	0	21.356	0	31.212	0	41.069	0	50.925	1	0.782	1	10.638	10	.027
11	0	1.807	0	11.663	0	21.520	0	31.376	0	41.233	0	51.089	1	0.946	1	10.802	11	.030
12	0	1.971	0	11.828	0	21.684	0	31.541	0	41.397	0	51.254	1	1.110	1	10.967	12	.033
13	0	2.136	0	11.992	0	21.849	0	31.705	0	41.561	0	51.418	1	1.274	1	11.131	13	.036
14	0	2.300	0	12.156	0	22.013	0	31.869	0	41.726	0	51.582	1	1.439	1	11.295	14	.038
15	0	2.464	0	12.321	0	22.177	0	32.034	0	41.890	0	51.746	1	1.603	1	11.459	15	.041
16	0	2.628	0	12.485	0	22.341	0	32.198	0	42.054	0	51.911	1	1.767	1	11.624	16	.044
17	0	2.793	0	12.649	0	22.506	0	32.362	0	42.219	0	52.075	1	1.932	1	11.788	17	.047
18	0	2.957	0	12.813	0	22.670	0	32.526	0	42.383	0	52.239	1	2.096	1	11.952	18	.049
19	0	3.121	0	12.978	0	22.834	0	32.691	0	42.547	0	52.404	1	2.260	1	12.117	19	.052
20	0	3.285	0	13.142	0	22.998	0	32.855	0	42.711	0	52.568	1	2.424	1	12.281	20	.055
21	0	3.450	0	13.306	0	23.163	0	33.019	0	42.876	0	52.732	1	2.589	1	12.445	21	.057
22	0	3.614	0	13.471	0	23.327	0	33.183	0	43.040	0	52.896	1	2.753	1	12.609	22	.060
23	0	3.778	0	13.635	0	23.491	0	33.348	0	43.204	0	53.061	1	2.917	1	12.774	23	.063
24	0	3.943	0	13.799	0	23.656	0	33.512	0	43.368	0	53.225	1	3.081	1	12.938	24	.066
25	0	4.107	0	13.963	0	23.820	0	33.676	0	43.533	0	53.389	1	3.246	1	13.102	25	.068
26	0	4.271	0	14.128	0	23.984	0	33.841	0	43.697	0	53.554	1	3.410	1	13.266	26	.071
27	0	4.435	0	14.292	0	24.148	0	34.005	0	43.861	0	53.718	1	3.574	1	13.431	27	.074
28	0	4.600	0	14.456	0	24.313	0	34.169	0	44.026	0	53.882	1	3.739	1	13.595	28	.077
29	0	4.764	0	14.620	0	24.477	0	34.333	0	44.190	0	54.046	1	3.903	1	13.759	29	.079
30	0	4.928	0	14.785	0	24.641	0	34.498	0	44.354	0	54.211	1	4.067	1	13.924	30	.082
31	0	5.093	0	14.949	0	24.805	0	34.662	0	44.518	0	54.375	1	4.231	1	14.088	31	.085
32	0	5.257	0	15.113	0	24.970	0	34.826	0	44.683	0	54.539	1	4.396	1	14.252	32	.088
33	0	5.421	0	15.278	0	25.134	0	34.990	0	44.847	0	54.703	1	4.569	1	14.416	33	.090
34	0	5.585	0	15.442	0	25.298	0	35.155	0	45.011	0	54.868	1	4.724	1	14.581	34	.093
35	0	5.750	0	15.696	0	25.463	0	35.319	0	45.176	0	55.032	1	4.888	1	14.745	35	.096
36	0	5.914	0	15.770	0	25.627	0	35.483	0	45.340	0	55.196	1	5.053	1	14.909	36	.099
37	0	6.078	0	15.935	0	25.791	0	35.648	0	45.504	0	55.361	1	5.217	1	15.073	37	.101
38	0	6.242	0	16.099	0	25.955	0	35.812	0	45.668	0	55.525	1	5.381	1	15.238	38	.104
39	0	6.407	0	16.263	0	26.120	0	35.976	0	45.833	0	55.689	1	5.546	1	15.402	39	.107
40	0	6.571	0	16.427	0	26.284	0	36.140	0	45.997	0	55.853	1	5.710	1	15.566	40	.110
41	0	6.735	0	16.592	0	26.448	0	36.305	0	46.161	0	56.018	1	5.874	1	15.731	41	.112
42	0	6.900	0	16.756	0	26.612	0	36.469	0	46.325	0	56.182	1	6.038	1	15.895	42	.115
43	0	7.064	0	16.920	0	26.777	0	36.633	0	46.490	0	56.346	1	6.203	1	16.059	43	.118
44	0	7.228	0	17.085	0	26.941	0	36.798	0	46.654	0	56.510	1	6.367	1	16.223	44	.120
45	0	7.392	0	17.249	0	27.105	0	36.962	0	46.818	0	56.675	1	6.531	1	16.388	45	.123
46	0	7.557	0	17.413	0	27.270	0	37.126	0	46.983	0	56.839	1	6.695	1	16.552	46	.126
47	0	7.721	0	17.577	0	27.434	0	37.290	0	47.147	0	57.003	1	6.860	1	16.716	47	.129
48	0	7.885	0	17.742	0	27.598	0	37.455	0	47.311	0	57.168	1	7.024	1	16.881	48	.131
49	0	8.049	0	17.906	0	27.762	0	37.619	0	47.475	0	57.332	1	7.188	1	17.045	49	.134
50	0	8.214	0	18.070	0	27.927	0	37.783	0	47.640	0	57.496	1	7.353	1	17.209	59	.137
51	0	8.378	0	18.234	0	28.091	0	37.947	0	47.804	0	57.669	1	7.517	1	17.373	51	.140
52	0	8.542	0	18.399	0	28.255	0	38.112	0	47.968	0	57.825	1	7.681	1	17.538	52	.142
53	0	8.707	0	18.563	0	28.420	0	38.276	0	48.132	0	57.989	1	7.845	1	17.702	53	.145
54	0	8.871	0	18.727	0	28.584	0	38.440	0	48.297	0	58.153	1	8.010	1	17.866	54	.148
55	0	9.035	0	18.892	0	28.748	0	38.605	0	48.461	0	58.317	1	8.174	1	18.030	55	.151
56	0	9.199	0	19.056	0	28.912	0	38.769	0	48.625	0	58.482	1	8.338	1	18.195	56	.153
57	0	9.364	0	19.220	0	29.077	0	38.933	0	48.790	0	58.646	1	8.502	1	18.359	57	.156
58	0	9.528	0	19.384	0	29.241	0	39.097	0	48.954	0	58.810	1	8.667	1	18.523	58	.159
59	0	9.692	0	19.549	0	29.405	0	39.262	0	49.118	0	58.975	1	8.831	1	18.688	59	0.162

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	8^{h}	9^{h}	10^{h}	11^{h}	12^{h}	13^{h}	14^{h}	15^{h}	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	1 18.852	1 28.708	1 38.565	1 48.421	1 58.278	2 8.134	2 17.991	2 27.847		
1	1 19.016	1 28.873	1 38.729	1 48.585	1 58.442	2 8.298	2 18.155	2 28.011	1	0.003
2	1 19.180	1 29.037	1 38.893	1 48.750	1 58.606	2 8.463	2 18.319	2 28.176	2	.005
3	1 19.345	1 29.201	1 39.058	1 48.914	1 58.771	2 8.627	2 18.483	2 28.340	3	.008
4	1 19.509	1 29.365	1 39.222	1 49.078	1 58.935	2 8.791	2 18.648	2 28.504	4	.011
5	1 19.673	1 29.530	1 39.386	1 49.243	1 59.099	2 8.956	2 18.812	2 28.668	5	.014
6	1 19.837	1 29.694	1 39.550	1 49.407	1 59.263	2 9.120	2 18.976	2 28.833	6	.016
7	1 20.002	1 29.858	1 39.715	1 49.571	1 59.428	2 9.284	2 19.141	2 28.997	7	.019
8	1 20.166	1 30.022	1 39.879	1 49.735	1 59.592	2 9.448	2 19.305	2 29.161	8	.022
9	1 20.330	1 30.187	1 40.043	1 49.900	1 59.756	2 9.613	2 19.469	2 29.326	9	.025
10	1 20.495	1 30.351	1 40.207	1 50.064	1 59.920	2 9.777	2 19.633	2 29.490	10	.027
11	1 20.659	1 30.515	1 40.372	1 50.228	2 0.085	2 9.941	2 19.798	2 29.654	11	.030
12	1 20.823	1 30.680	1 40.536	1 50.393	2 0.249	2 10.105	2 19.962	2 29.818	12	.033
13	1 20.987	1 30.844	1 40.700	1 50.557	2 0.413	2 10.270	2 20.126	2 29.983	13	.036
14	1 21.152	1 31.008	1 40.865	1 50.721	2 0.578	2 10.434	2 20.290	2 30.147	14	.038
15	1 21.316	1 31.172	1 41.029	1 50.885	2 0.742	2 10.598	2 20.455	2 30.311	15	.041
16	1 21.480	1 31.337	1 41.193	1 51.050	2 0.906	2 10.763	2 20.619	2 30.476	16	.044
17	1 21.644	1 31.501	1 41.357	1 51.214	2 1.070	2 10.927	2 20.783	2 30.640	17	.047
18	1 21.809	1 31.665	1 41.522	1 51.378	2 1.235	2 11.091	2 20.948	2 30.804	18	.049
19	1 21.973	1 31.829	1 41.686	1 51.542	2 1.399	2 11.255	2 21.112	2 30.968	19	.052
20	1 22.137	1 31.994	1 41.850	1 51.707	2 1.563	2 11.420	2 21.276	2 31.133	20	.055
21	1 22.302	1 32.158	1 42.015	1 51.871	2 1.727	2 11.584	2 21.440	2 31.297	21	.057
22	1 22.466	1 32.322	1 42.179	1 52.035	2 1.892	2 11.748	2 21.605	2 31.461	22	.060
23	1 22.630	1 32.487	1 42.343	1 52.200	2 2.056	2 11.912	2 21.769	2 31.625	23	.063
24	1 22.794	1 32.651	1 42.507	1 52.364	2 2.220	2 12.077	2 21.933	2 31.790	24	.066
25	1 22.959	1 32.815	1 42.672	1 52.528	2 2.385	2 12.241	2 22.098	2 31.954	25	.068
26	1 23.123	1 32.979	1 42.836	1 52.692	2 2.549	2 12.405	2 22.262	2 32.118	26	.071
27	1 23.287	1 33.144	1 43.000	1 52.857	2 2.713	2 12.570	2 22.426	2 32.283	27	.074
28	1 23.451	1 33.308	1 43.164	1 53.021	2 2.877	2 12.734	2 22.590	2 32.447	28	.077
29	1 23.616	1 33.472	1 43.329	1 53.185	2 3.042	2 12.898	2 22.755	2 32.611	29	.079
30	1 23.780	1 33.637	1 43.493	1 53.349	2 3.206	2 13.062	2 22.919	2 32.775	30	.082
31	1 23.944	1 33.801	1 43.657	1 53.514	2 3.370	2 13.227	2 23.083	2 32.940	31	.085
32	1 24.109	1 33.965	1 43.822	1 53.678	2 3.534	2 13.391	2 23.247	2 33.104	32	.088
33	1 24.273	1 34.129	1 43.986	1 53.842	2 3.699	2 13.555	2 23.412	2 33.268	33	.090
34	1 24.437	1 34.294	1 44.150	1 54.007	2 3.863	2 13.720	2 23.576	2 33.432	34	.093
35	1 24.601	1 34.458	1 44.314	1 54.171	2 4.027	2 13.884	2 23.740	2 33.597	35	.096
36	1 24.766	1 34.622	1 44.479	1 54.335	2 4.192	2 14.048	2 23.905	2 33.761	36	.099
37	1 24.930	1 34.786	1 44.643	1 54.499	2 4.356	2 14.212	2 24.069	2 33.925	37	.101
38	1 25.094	1 34.951	1 44.807	1 54.664	2 4.520	2 14.377	2 24.233	2 34.090	38	.104
39	1 25.259	1 35.115	1 44.971	1 54.828	2 4.684	2 14.541	2 24.397	2 34.254	39	.107
40	1 25.423	1 35.279	1 45.136	1 54.992	2 4.849	2 14.705	2 24.562	2 34.418	40	.110
41	1 25.587	1 35.444	1 45.300	1 55.156	2 5.013	2 14.869	2 24.726	2 34.582	41	.112
42	1 25.751	1 35.608	1 45.464	1 55.321	2 5.177	2 15.034	2 24.890	2 34.747	42	.115
43	1 25.916	1 35.772	1 45.629	1 55.485	2 5.342	2 15.198	2 25.054	2 34.911	43	.118
44	1 26.080	1 35.936	1 45.793	1 55.649	2 5.506	2 15.362	2 25.219	2 35.075	44	.120
45	1 26.244	1 36.101	1 45.957	1 55.814	2 5.670	2 15.527	2 25.383	2 35.239	45	.123
46	1 26.408	1 36.265	1 46.121	1 55.978	2 5.834	2 15.691	2 25.547	2 35.404	46	.126
47	1 26.573	1 36.429	1 46.286	1 56.142	2 5.999	2 15.855	2 25.712	2 35.568	47	.129
48	1 26.737	1 36.593	1 46.450	1 56.306	2 6.163	2 16.019	2 25.876	2 35.732	48	.131
49	1 26.901	1 36.758	1 46.614	1 56.471	2 6.327	2 16.184	2 26.040	2 35.897	49	.134
50	1 27.066	1 36.922	1 46.778	1 56.635	2 6.491	2 16.348	2 26.204	2 36.061	50	.137
51	1 27.230	1 37.086	1 46.943	1 56.799	2 6.656	2 16.512	2 26.369	2 36.225	51	.140
52	1 27.394	1 37.251	1 47.107	1 56.964	2 6.820	2 16.676	2 26.533	2 36.389	52	.142
53	1 27.558	1 37.415	1 47.271	1 57.128	2 6.984	2 16.841	2 26.697	2 36.554	53	.145
54	1 27.723	1 37.579	1 47.436	1 57.292	2 7.149	2 17.005	2 26.861	2 36.718	54	.148
55	1 27.887	1 37.743	1 47.600	1 57.456	2 7.313	2 17.169	2 27.026	2 36.882	55	.151
56	1 28.051	1 37.908	1 47.764	1 57.621	2 7.477	2 17.334	2 27.190	2 37.047	56	.153
57	1 28.215	1 38.072	1 47.928	1 57.785	2 7.641	2 17.498	2 27.354	2 37.211	57	.156
58	1 28.380	1 38.236	1 48.093	1 57.949	2 7.806	2 17.662	2 27.519	2 37.375	58	.159
59	1 28.544	1 38.400	1 48.257	1 58.113	2 7.970	2 17.826	2 27.683	2 37.539	59	0.162

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	2 37.704	2 47.560	2 57.417	3 7.273	3 17.129	3 26.986	3 36.842	3 46.699		
1	2 37.868	2 47.724	2 57.581	3 7.437	3 17.294	3 27.150	3 37.007	3 46.863	1	0.003
2	2 38.032	2 47.889	2 57.745	3 7.602	3 17.458	3 27.315	3 37.171	3 47.027	2	.005
3	2 38.196	2 48.053	2 57.909	3 7.766	3 17.622	3 27.479	3 37.335	3 47.192	3	.008
4	2 38.361	2 48.217	2 58.074	3 7.930	3 17.787	3 27.643	3 37.500	3 47.356	4	.011
5	2 38.525	2 48.381	2 58.238	3 8.094	3 17.951	3 27.807	3 37.664	3 47.520	5	.014
6	2 38.689	2 48.546	2 58.402	3 8.259	3 18.115	3 27.972	3 37.828	3 47.685	6	.016
7	2 38.854	2 48.710	2 58.566	3 8.423	3 18.279	3 28.136	3 37.992	3 47.849	7	.019
8	2 39.018	2 48.874	2 58.731	3 8.587	3 18.444	3 28.300	3 38.157	3 48.013	8	.022
9	2 39.182	2 49.039	2 58.895	3 8.751	3 18.608	3 28.464	3 38.321	3 48.177	9	.025
10	2 39.346	2 49.203	2 59.059	3 8.916	3 18.772	3 28.629	3 38.485	3 48.342	10	.027
11	2 39.511	2 49.367	2 59.224	3 9.080	3 18.937	3 28.793	3 38.649	3 48.506	11	.030
12	2 39.675	2 49.531	2 59.388	3 9.244	3 19.101	3 28.957	3 38.814	3 48.670	12	.033
13	2 39.839	2 49.696	2 59.552	3 9.409	3 19.265	3 29.122	3 38.978	3 48.834	13	.036
14	2 40.003	2 49.860	2 59.716	3 9.573	3 19.429	3 29.286	3 39.142	3 48.999	14	.038
15	2 40.168	2 50.024	2 59.881	3 9.737	3 19.594	3 29.450	3 39.307	3 49.163	15	.041
16	2 40.332	2 50.188	3 0.045	3 9.901	3 19.758	3 29.614	3 39.471	3 49.327	16	.044
17	2 40.496	2 50.353	3 0.209	3 10.066	3 19.922	3 29.779	3 39.635	3 49.492	17	.047
18	2 40.661	2 50.517	3 0.373	3 10.230	3 20.086	3 29.943	3 39.799	3 49.656	18	.049
19	2 40.825	2 50.681	3 0.538	3 10.394	3 20.251	3 30.107	3 39.964	3 49.820	19	.052
20	2 40.989	2 50.846	3 0.702	3 10.559	3 20.415	3 30.271	3 40.128	3 49.984	20	.055
21	2 41.153	2 51.010	3 0.866	3 10.723	3 20.579	3 30.436	3 40.292	3 50.149	21	.057
22	2 41.318	2 51.174	3 1.031	3 10.887	3 20.744	3 30.600	3 40.456	3 50.313	22	.060
23	2 41.482	2 51.338	3 1.195	3 11.051	3 20.908	3 30.764	3 40.621	3 50.477	23	.063
24	2 41.646	2 51.503	3 1.359	3 11.216	3 21.072	3 30.929	3 40.785	3 50.642	24	.066
25	2 41.810	2 51.667	3 1.523	3 11.380	3 21.236	3 31.093	3 40.949	3 50.806	25	.068
26	2 41.975	2 51.831	3 1.688	3 11.544	3 21.401	3 31.257	3 41.114	3 50.970	26	.071
27	2 42.139	2 51.995	3 1.852	3 11.708	3 21.565	3 31.421	3 41.278	3 51.134	27	.074
28	2 42.303	2 52.160	3 2.016	3 11.873	3 21.729	3 31.586	3 41.442	3 51.299	28	.077
29	2 42.468	2 52.324	3 2.181	3 12.037	3 21.893	3 31.750	3 41.606	3 51.463	29	.079
30	2 42.632	2 52.488	3 2.345	3 12.201	3 22.058	3 31.914	3 41.771	3 51.627	30	.082
31	2 42.796	2 52.653	3 2.509	3 12.366	3 22.222	3 32.078	3 41.935	3 51.791	31	.085
32	2 42.960	2 52.817	3 2.673	3 12.530	3 22.386	3 32.243	3 42.099	3 51.956	32	.088
33	2 43.125	2 52.981	3 2.838	3 12.694	3 22.551	3 32.407	3 42.264	3 52.120	33	.090
34	2 43.289	2 53.145	3 3.002	3 12.858	3 22.715	3 32.571	3 42.428	3 52.284	34	.093
35	2 43.453	2 53.310	3 3.166	3 13.023	3 22.879	3 32.736	3 42.592	3 52.449	35	.096
36	2 43.617	2 53.474	3 3.330	3 13.187	3 23.043	3 32.900	3 42.756	3 52.613	36	.099
37	2 43.782	2 53.638	3 3.495	3 13.351	3 23.208	3 33.064	3 42.921	3 52.777	37	.101
38	2 43.946	2 53.803	3 3.659	3 13.515	3 23.372	3 33.228	3 43.085	3 52.941	38	.104
39	2 44.110	2 53.967	3 3.823	3 13.680	3 23.536	3 33.393	3 43.249	3 53.106	39	.107
40	2 44.275	2 54.131	3 3.988	3 13.844	3 23.700	3 33.557	3 43.413	3 53.270	40	.110
41	2 44.439	2 54.295	3 4.152	3 14.008	3 23.865	3 33.721	3 43.578	3 53.434	41	.112
42	2 44.603	2 54.460	3 4.316	3 14.173	3 24.029	3 33.886	3 43.742	3 53.598	42	.115
43	2 44.767	2 54.624	3 4.480	3 14.337	3 24.193	3 34.050	3 43.906	3 53.763	43	.118
44	2 44.932	2 54.788	3 4.645	3 14.501	3 24.358	3 34.214	3 44.071	3 53.927	44	.120
45	2 45.096	2 54.952	3 4.809	3 14.665	3 24.522	3 34.378	3 44.235	3 54.091	45	.123
46	2 45.260	2 55.117	3 4.973	3 14.830	3 24.686	3 34.543	3 44.399	3 54.256	46	.126
47	2 45.425	2 55.281	3 5.137	3 14.994	3 24.850	3 34.707	3 44.563	3 54.420	47	.129
48	2 45.589	2 55.445	3 5.302	3 15.158	3 25.015	3 34.871	3 44.728	3 54.584	48	.131
49	2 45.753	2 55.610	3 5.466	3 15.322	3 25.179	3 35.035	3 44.892	3 54.748	49	.124
50	2 45.917	2 55.774	3 5.630	3 15.487	3 25.343	3 35.200	3 45.056	3 54.913	50	.137
51	2 46.082	2 55.938	3 5.795	3 15.651	3 25.508	3 35.364	3 45.220	3 55.077	51	.140
52	2 46.246	2 56.102	3 5.959	3 15.815	3 25.672	3 35.528	3 45.385	3 55.241	52	.142
53	2 46.410	2 56.267	3 6.123	3 15.980	3 25.836	3 35.693	3 45.549	3 55.405	53	.145
54	2 46.574	2 56.431	3 6.287	3 16.144	3 26.000	3 35.857	3 45.713	3 55.570	54	.148
55	2 46.739	2 56.595	3 6.452	3 16.308	3 26.165	3 36.021	3 45.878	3 55.734	55	.151
56	2 46.903	2 56.759	3 6.616	3 16.472	3 26.329	3 36.185	3 46.042	3 55.898	56	.153
57	2 47.067	2 56.924	3 6.780	3 16.637	3 26.493	3 36.350	3 46.206	3 56.063	57	.156
58	2 47.232	2 57.088	3 6.944	3 16.801	3 26.657	3 36.514	3 46.370	3 56.227	58	.159
59	2 47.396	2 57.252	3 7.109	3 16.965	3 26.822	3 36.678	3 46.535	3 56.391	59	0.162

TABLE IV.

TABLE GIVING, FOR SEVEN POLAR STARS, THE CORRECTIONS OF THE APPARENT PLACE WHICH DEPEND ON THE ARGUMENT 2 ☾ IN NUTATION.—1870.0.

☾ or ☾—180°.	α Urs. Min.		51 Cephei.		32 Camelop.		ε Urs. Min.		δ Urs. Min.		λ Urs. Min.		σ Octantis.		☾ or ☾—180°.
	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	
°	s	″	s	″	s	″	s	″	s	″	s	″	s	″	°
0	-.233	+.03	+.021	+.09	+.056	-.02	+.011	-.09	-.006	-.09	-.150	-.08	+.013	-.09	90
2	.238	.02	.012	.09	.056	.01	.013	.08	-.001	.09	.133	.08	-.018	.09	92
4	.242	.02	+.003	.09	.055	—.01	.015	.08	+.005	.09	.115	.08	.049	.09	94
6	.245	+.01	-.005	.09	.055	.00	.016	.08	.010	.09	.097	.08	.080	.09	96
8	.246	.00	.014	.09	.054	.00	.018	.08	.016	.09	.078	.09	.110	.09	98
10	-.246	.00	-.023	+.09	+.052	+.01	+.019	-.07	+.021	-.08	-.059	-.09	-.139	.08	100
12	.246	-.01	.031	.09	.051	.01	.021	.07	.026	.08	.040	.09	.168	.08	102
14	.244	.01	.039	.08	.049	.02	.022	.07	.031	.08	-.020	.09	.196	.08	104
16	.241	.02	.048	.08	.047	.03	.023	.06	.036	.08	.000	.09	.224	.08	106
18	.237	.02	.056	.08	.045	.03	.024	.06	.041	.07	+.019	.09	.250	.07	108
20	-.230	-.03	-.063	+.08	+.042	+.04	+.025	-.05	+.046	-.07	+.039	-.08	-.275	.07	110
22	.224	.03	.071	.07	.039	.04	.026	.05	.050	.07	.058	.08	.298	.07	112
24	.216	.04	.078	.07	.036	.05	.027	.04	.054	.06	.078	.08	.320	.06	114
26	.207	.04	.084	.07	.033	.05	.027	.04	.058	.06	.097	.08	.341	.06	116
28	.197	.05	.091	.06	.030	.06	.028	.03	.062	.05	.115	.08	.360	.05	118
30	-.187	-.05	-.096	+.06	+.027	+.06	+.028	-.02	+.065	-.05	+.133	-.07	-.377	-.05	120
32	.175	.06	.102	.05	.023	.06	.028	.02	.068	.04	.150	.07	.392	.04	122
34	.162	.06	.107	.05	.020	.07	.028	.01	.071	.04	.166	.07	.406	.03	124
36	.149	.07	.111	.04	.016	.07	.028	-.01	.073	.03	.182	.06	.417	.03	126
38	.135	.07	.115	.03	.012	.07	.028	.00	.075	.03	.196	.06	.426	.02	128
40	-.120	-.07	-.118	+.03	+.008	+.07	+.028	+.01	+.077	-.02	+.210	-.05	-.434	-.02	130
42	.105	.07	.120	.02	+.004	.08	.027	.01	.078	.01	.223	.05	.439	.01	132
44	.089	.08	.122	.02	.000	.08	.026	.02	.079	-.01	.235	.04	.442	-.01	134
46	.073	.08	.124	+.01	-.004	.08	.026	.02	.079	.09	.245	.04	.443	.00	136
48	.056	.08	.125	.00	.007	.08	.025	.03	.079	.00	.254	.03	.442	+.01	138
50	-.039	-.08	-.125	.00	-.011	+.08	+.024	+.04	+.079	+.01	+.262	-.02	-.438	+.01	140
52	.022	.08	.125	-.01	.015	.08	.023	.04	.078	.02	.269	.02	.433	.02	142
54	-.005	.08	.124	.01	.019	.08	.021	.05	.077	.02	.275	.01	.425	.02	144
56	+.012	.08	.122	.02	.022	.08	.020	.05	.075	.03	.279	-.01	.415	.03	146
58	.029	.08	.120	.03	.026	.08	.018	.06	.073	.03	.282	.00	.404	.04	148
60	+.046	-.08	-.117	-.03	-.029	+.08	+.017	+.06	+.071	+.04	+.283	+.01	-.390	+.04	150
62	.063	.08	.114	.04	.033	.08	.015	.07	.069	.04	.283	.01	.374	.05	152
64	.079	.08	.110	.04	.036	.07	.014	.07	.066	.05	.281	.02	.357	.05	154
66	.095	.08	.106	.05	.039	.07	.012	.07	.063	.05	.279	.02	.338	.06	156
68	.111	.07	.101	.05	.041	.07	.010	.08	.059	.06	.275	.03	.317	.06	158
70	+.126	-.07	.095	-.06	-.044	+.06	+.008	+.08	+.055	+.06	+.269	+.03	-.294	+.07	160
72	.141	.07	.089	.06	.046	.06	.006	.08	.051	.07	.263	.04	.271	.07	162
74	.154	.06	.083	.07	.048	.06	.004	.08	.047	.07	.255	.04	.245	.07	164
76	.167	.06	.076	.07	.050	.05	+.002	.08	.043	.08	.245	.05	.219	.08	166
78	.180	.06	.069	.07	.052	.05	.000	.09	.038	.08	.235	.05	.192	.08	168
80	+.191	-.05	-.062	-.08	-.053	+.04	-.002	+.09	+.033	+.08	+.223	+.06	-.163	+.08	170
82	.201	.05	.054	.08	.054	.04	.004	.09	.028	.08	.210	.06	.134	.08	172
84	.211	.04	.046	.08	.055	.03	.006	.09	.023	.09	.197	.07	.105	.09	174
86	.219	.04	.038	.08	.056	.03	.008	.09	.017	.09	.182	.07	.074	.09	176
88	.226	.03	.029	.09	.056	.02	.010	.09	.012	.09	.166	.08	.044	.09	178
90	+.233	-.03	-.021	-.09	-.056	+.02	-.011	+.09	+.006	+.09	+.150	+.08	-.013	+.09	180

NOTE.—When the Argument is on the right-hand side of the Table, the sign of the correction is to be reversed. The Moon's Mean Longitude, ☾, may be found on page 344.

TABLE V.

TABLE GIVING THE CORRECTIONS OF THE CONSTANTS A AND B WHICH DEPEND ON THE ARGUMENT 2ζ, IN UNITS OF THE FIFTH DECIMAL FOR A, AND OF THE FOURTH FOR B

(2ζ − l)	A	B	(2ζ − l)	A	B	(2ζ − l)	A	B	(2ζ − l)	A	B
0	− 0	[illegible]	45	[illegible]	+ 0	90	+ 0	[illegible]	135	[illegible]	[illegible]
1	14	[illegible]	46	[illegible]	31	91	14	[illegible]	136	[illegible]	[illegible]
2	[illegible]	[illegible]	47	[illegible]	61	92	[illegible]	[illegible]	137	[illegible]	[illegible]
3	42	[illegible]	48	[illegible]	[illegible]	93	42	[illegible]	138	[illegible]	[illegible]
4	[illegible]	[illegible]	49	[illegible]	[illegible]	94	[illegible]	[illegible]	139	[illegible]	[illegible]
5	− 70	[illegible]	50	[illegible]	[illegible]	95	+ 70	[illegible]	140	[illegible]	[illegible]
6	[illegible]	[illegible]	51	[illegible]	[illegible]	96	[illegible]	[illegible]	141	[illegible]	[illegible]
7	[illegible]	[illegible]	52	[illegible]	[illegible]	97	[illegible]	[illegible]	142	[illegible]	[illegible]
8	112	[illegible]	53	[illegible]	[illegible]	98	112	[illegible]	143	[illegible]	[illegible]
9	[illegible]	[illegible]	54	[illegible]	[illegible]	99	[illegible]	[illegible]	144	[illegible]	[illegible]
10	[illegible]	[illegible]	55	[illegible]	[illegible]	100	[illegible]	[illegible]	145	[illegible]	[illegible]
11	[illegible]	[illegible]	56	[illegible]	[illegible]	101	[illegible]	[illegible]	146	[illegible]	[illegible]
12	[illegible]	[illegible]	57	[illegible]	[illegible]	102	[illegible]	[illegible]	147	[illegible]	[illegible]
13	[illegible]	[illegible]	58	[illegible]	[illegible]	103	[illegible]	[illegible]	148	[illegible]	[illegible]
14	[illegible]	[illegible]	59	[illegible]	[illegible]	104	[illegible]	[illegible]	149	[illegible]	[illegible]
15	[illegible]	[illegible]	60	[illegible]	[illegible]	105	[illegible]	[illegible]	150	[illegible]	[illegible]
16	214	[illegible]	61	[illegible]	[illegible]	106	214	[illegible]	151	[illegible]	[illegible]
17	[illegible]	[illegible]	62	[illegible]	[illegible]	107	[illegible]	[illegible]	152	[illegible]	[illegible]
18	[illegible]	[illegible]	63	[illegible]	[illegible]	108	[illegible]	[illegible]	153	[illegible]	[illegible]
19	[illegible]	[illegible]	64	[illegible]	[illegible]	109	[illegible]	[illegible]	154	[illegible]	[illegible]
20	[illegible]	[illegible]	65	[illegible]	[illegible]	110	[illegible]	[illegible]	155	[illegible]	[illegible]
21	[illegible]	[illegible]	66	[illegible]	[illegible]	111	[illegible]	[illegible]	156	[illegible]	[illegible]
22	[illegible]	[illegible]	67	[illegible]	[illegible]	112	[illegible]	[illegible]	157	[illegible]	[illegible]
23	[illegible]	[illegible]	68	[illegible]	[illegible]	113	[illegible]	[illegible]	158	[illegible]	[illegible]
24	[illegible]	[illegible]	69	[illegible]	[illegible]	114	[illegible]	[illegible]	159	[illegible]	[illegible]
25	[illegible]	[illegible]	70	[illegible]	[illegible]	115	[illegible]	[illegible]	160	[illegible]	[illegible]
26	[illegible]	[illegible]	71	[illegible]	[illegible]	116	[illegible]	[illegible]	161	[illegible]	[illegible]
27	[illegible]	[illegible]	72	[illegible]	[illegible]	117	[illegible]	[illegible]	162	[illegible]	[illegible]
28	[illegible]	[illegible]	73	[illegible]	[illegible]	118	[illegible]	[illegible]	163	[illegible]	[illegible]
29	[illegible]	[illegible]	74	[illegible]	[illegible]	119	[illegible]	[illegible]	164	[illegible]	[illegible]
30	[illegible]	[illegible]	75	[illegible]	[illegible]	120	[illegible]	[illegible]	165	[illegible]	[illegible]
31	[illegible]	[illegible]	76	[illegible]	[illegible]	121	[illegible]	[illegible]	166	[illegible]	[illegible]
32	[illegible]	[illegible]	77	[illegible]	[illegible]	122	[illegible]	[illegible]	167	[illegible]	[illegible]
33	[illegible]	[illegible]	78	[illegible]	[illegible]	123	[illegible]	[illegible]	168	[illegible]	[illegible]
34	[illegible]	[illegible]	79	[illegible]	[illegible]	124	[illegible]	[illegible]	169	[illegible]	[illegible]
35	[illegible]	[illegible]	80	[illegible]	[illegible]	125	[illegible]	[illegible]	170	[illegible]	[illegible]
36	[illegible]	[illegible]	81	[illegible]	[illegible]	126	[illegible]	[illegible]	171	[illegible]	[illegible]
37	[illegible]	[illegible]	82	[illegible]	[illegible]	127	[illegible]	[illegible]	172	[illegible]	[illegible]
38	[illegible]	[illegible]	83	[illegible]	[illegible]	128	[illegible]	[illegible]	173	[illegible]	[illegible]
39	[illegible]	[illegible]	84	[illegible]	[illegible]	129	[illegible]	[illegible]	174	[illegible]	[illegible]
40	[illegible]	[illegible]	85	[illegible]	[illegible]	130	[illegible]	[illegible]	175	[illegible]	[illegible]
41	[illegible]	[illegible]	86	[illegible]	[illegible]	131	[illegible]	[illegible]	176	[illegible]	[illegible]
42	[illegible]	[illegible]	87	[illegible]	[illegible]	132	[illegible]	[illegible]	177	[illegible]	[illegible]
43	[illegible]	[illegible]	88	[illegible]	[illegible]	133	[illegible]	[illegible]	178	[illegible]	[illegible]
44	[illegible]	[illegible]	89	[illegible]	[illegible]	134	[illegible]	[illegible]	179	[illegible]	[illegible]
45	[illegible]	[illegible]	90	[illegible]	[illegible]	135	[illegible]	[illegible]	180	[illegible]	[illegible]

[illegible]

TABLE VI.

TABLE GIVING THE CORRECTIONS OF THE CONSTANTS *A* AND *B* DEPENDING ON THE SMALL TERMS OF THE NUTATION, IN UNITS OF THE FIFTH DECIMAL FOR *A*, AND OF THE FOURTH FOR *B*.

Arg.	☾ − Γ′.	2☉ − 2Γ′.	2☉ − 2☊.	2☉ − ☊.		2Γ′ − ☊.		Γ′.		☉	
	A.	*A.*	*A.*	*A.*	*B.*	*A.*	*B.*	*A.*	*B.*	*A.*	*B.*
0°	+ 0	+ 0	− 0	+ 0	+67	+0	+24	+5	+ 8	−11	− 5
10	23	2	1	4	66	2	24	6	+ 4	10	+ 9
20	46	3	2	9	63	3	23	7	− 2	7	21
30	68	5	2	12	58	4	21	8	8	− 2	27
40	87	6	3	16	51	6	18	8	13	+ 4	25
50	+103	+ 8	− 4	+19	+43	+7	+15	+7	−19	+ 8	+17
60	117	9	4	22	34	8	12	6	24	11	+ 5
70	127	9	4	24	23	8	8	4	28	10	− 9
80	133	10	5	25	+12	9	+ 4	+2	30	7	21
90	135	10	5	25	0	9	0	0	31	+ 2	27
100	+133	+10	− 5	+25	−12	+9	− 4	−2	−30	− 4	−25
110	127	9	5	24	23	8	8	4	28	8	17
120	117	9	4	22	34	8	12	6	24	11	− 5
130	103	8	4	19	43	7	15	7	19	10	+ 9
140	87	6	3	16	51	6	18	8	13	7	21
150	+ 68	+ 5	− 2	+12	−58	+4	−21	−8	− 8	− 2	+27
160	46	3	2	9	63	3	23	7	− 2	+ 4	25
170	+ 23	+ 2	− 1	+ 4	66	+2	24	6	+ 4	8	17
180	0	0	0	0	67	0	24	5	8	11	+ 5
190	− 23	− 2	+ 1	− 4	66	−2	24	4	12	10	− 9
200	− 46	− 3	+ 2	− 9	−63	−3	−23	−2	+14	+ 7	−21
210	68	5	2	12	58	4	21	−1	16	+ 2	27
220	87	6	3	16	51	6	18	0	16	− 4	25
230	103	8	4	19	43	7	15	+1	16	8	17
240	117	9	4	22	34	8	12	1	16	11	− 5
250	−127	− 9	+ 5	−24	−23	−8	− 8	+1	+16	−10	+ 9
260	133	10	5	25	−12	9	− 4	0	15	7	21
270	135	10	5	25	0	9	0	0	15	− 2	27
280	133	10	5	25	+12	9	+ 4	0	15	+ 4	25
290	127	9	5	24	23	8	8	−1	16	8	17
300	−117	− 9	+ 4	−22	+34	−8	+12	−1	+16	+11	+ 5
310	103	8	4	19	43	7	15	−1	16	10	− 9
320	87	6	3	16	51	6	18	0	16	7	21
330	68	5	2	12	58	4	21	+1	16	+ 2	27
340	46	3	2	9	63	3	23	2	14	− 4	25
350	− 23	− 2	+ 1	− 4	+66	−2	+24	+4	+12	− 8	−17
360	− 0	− 0	+ 0	− 0	+67	−0	+24	+5	+ 8	−11	− 5

Year.	☾ − Γ′.	2☉ − 2Γ′.	2☉ − 2☊.	2☉ − ☊.	2Γ′ − ☊.	Γ′.	3☉ − Γ.
1865	335°.6	221°.2	129°.7	345°.6	124°.5	350°.3	202°.0
1866	64.4	139.3	167.8	4.5	225.2	31.0	201.3
1867	153.1	57.5	206.0	23.4	325.9	71.7	200.6
1868	254.9	337.4	246.3	44.3	66.8	112.4	202.9
1869	343.6	255.6	284.5	62.2	167.5	153.1	202.2
1870	72.3	173.8	322.7	81.1	268.2	193.7	201.5
1871	161.0	91.9	0.9	100.0	8.9	234.4	200.9
1872	262.8	11.8	41.2	121.0	109.8	275.2	203.1
1873	351.5	290.0	79.4	139.9	210.5	315.8	202.5
1874	80.3	208.2	117.7	158.8	311.2	356.5	201.8
Daily Motion.	13°.065	1°.749	2°.007	2°.024	0°.276	0°.111	2°.957

NOTE.—The arguments given above are for Jan. 0.5 in common years, but for Jan. 1.5 in leap years.

TABLE VII.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
° 0h.	′ 0m.	″ 0s.		0.0000	0.3010	0.4771	0.6021	0.6990	0.7782	0.8451	0.9031	0.9542
	0	10	1.0000	1.0414	1.0792	1.1139	1.1461	1.1761	1.2041	1.2304	1.2553	1.2788
	0	20	1.3010	1.3222	1.3424	1.3617	1.3802	1.3979	1.4150	1.4314	1.4472	1.4624
	0	30	1.4771	1.4914	1.5051	1.5185	1.5315	1.5441	1.5563	1.5682	1.5798	1.5911
	0	40	1.6021	1.6128	1.6232	1.6335	1.6435	1.6532	1.6628	1.6721	1.6812	1.6902
	0	50	1.6990	1.7076	1.7160	1.7243	1.7324	1.7404	1.7482	1.7559	1.7634	1.7709
0	1	0	1.7782	1.7853	1.7924	1.7993	1.8062	1.8129	1.8195	1.8261	1.8325	1.8388
	1	10	1.8451	1.8513	1.8573	1.8633	1.8692	1.8751	1.8808	1.8865	1.8921	1.8976
	1	20	1.9031	1.9085	1.9138	1.9191	1.9243	1.9294	1.9345	1.9395	1.9445	1.9494
	1	30	1.9542	1.9590	1.9638	1.9685	1.9731	1.9777	1.9823	1.9868	1.9912	1.9956
	1	40	2.0000	2.0043	2.0086	2.0128	2.0170	2.0212	2.0253	2.0294	2.0334	2.0374
	1	50	2.0414	2.0453	2.0492	2.0531	2.0569	2.0607	2.0645	2.0682	2.0719	2.0755
0	2	0	2.0792	2.0828	2.0864	2.0899	2.0934	2.0969	2.1004	2.1038	2.1072	2.1106
	2	10	2.1139	2.1173	2.1206	2.1239	2.1271	2.1303	2.1335	2.1367	2.1399	2.1430
	2	20	2.1461	2.1492	2.1523	2.1553	2.1584	2.1614	2.1644	2.1673	2.1703	2.1732
	2	30	2.1761	2.1790	2.1818	2.1847	2.1875	2.1903	2.1931	2.1959	2.1987	2.2014
	2	40	2.2041	2.2068	2.2095	2.2122	2.2148	2.2175	2.2201	2.2227	2.2253	2.2279
	2	50	2.2304	2.2330	2.2355	2.2380	2.2405	2.2430	2.2455	2.2480	2.2504	2.2529
0	3	0	2.2553	2.2577	2.2601	2.2625	2.2648	2.2672	2.2695	2.2718	2.2742	2.2765
	3	10	2.2788	2.2810	2.2833	2.2856	2.2878	2.2900	2.2923	2.2945	2.2967	2.2989
	3	20	2.3010	2.3032	2.3054	2.3075	2.3096	2.3118	2.3139	2.3160	2.3181	2.3201
	3	30	2.3222	2.3243	2.3263	2.3284	2.3304	2.3324	2.3345	2.3365	2.3385	2.3404
	3	40	2.3424	2.3444	2.3464	2.3483	2.3502	2.3522	2.3541	2.3560	2.3579	2.3598
	3	50	2.3617	2.3636	2.3655	2.3674	2.3692	2.3711	2.3729	2.3747	2.3766	2.3784
0	4	0	2.3802	2.3820	2.3838	2.3856	2.3874	2.3892	2.3909	2.3927	2.3945	2.3962
	4	10	2.3979	2.3997	2.4014	2.4031	2.4048	2.4065	2.4082	2.4099	2.4116	2.4133
	4	20	2.4150	2.4166	2.4183	2.4200	2.4216	2.4232	2.4249	2.4265	2.4281	2.4298
	4	30	2.4314	2.4330	2.4346	2.4362	2.4378	2.4393	2.4409	2.4425	2.4440	2.4456
	4	40	2.4472	2.4487	2.4502	2.4518	2.4533	2.4548	2.4564	2.4579	2.4594	2.4609
	4	50	2.4624	2.4639	2.4654	2.4669	2.4683	2.4698	2.4713	2.4728	2.4742	2.4757
0	5	0	2.4771	2.4786	2.4800	2.4814	2.4829	2.4843	2.4857	2.4871	2.4886	2.4900
	5	10	2.4914	2.4928	2.4942	2.4955	2.4969	2.4983	2.4997	2.5011	2.5024	2.5038
	5	20	2.5051	2.5065	2.5079	2.5092	2.5105	2.5119	2.5132	2.5145	2.5159	2.5172
	5	30	2.5185	2.5198	2.5211	2.5224	2.5237	2.5250	2.5263	2.5276	2.5289	2.5302
	5	40	2.5315	2.5328	2.5340	2.5353	2.5366	2.5378	2.5391	2.5403	2.5416	2.5428
	5	50	2.5441	2.5453	2.5465	2.5478	2.5490	2.5502	2.5514	2.5527	2.5539	2.5551
0	6	0	2.5563	2.5575	2.5587	2.5599	2.5611	2.5623	2.5635	2.5647	2.5658	2.5670
	6	10	2.5682	2.5694	2.5705	2.5717	2.5729	2.5740	2.5752	2.5763	2.5775	2.5786
	6	20	2.5798	2.5809	2.5821	2.5832	2.5843	2.5855	2.5866	2.5877	2.5888	2.5899
	6	30	2.5911	2.5922	2.5933	2.5944	2.5955	2.5966	2.5977	2.5988	2.5999	2.6010
	6	40	2.6021	2.6031	2.6042	2.6053	2.6064	2.6075	2.6085	2.6096	2.6107	2.6117
	6	50	2.6128	2.6138	2.6149	2.6160	2.6170	2.6180	2.6191	2.6201	2.6212	2.6222
0	7	0	2.6232	2.6243	2.6253	2.6263	2.6274	2.6284	2.6294	2.6304	2.6314	2.6325
	7	10	2.6335	2.6345	2.6355	2.6365	2.6375	2.6385	2.6395	2.6405	2.6415	2.6425
	7	20	2.6435	2.6444	2.6454	2.6464	2.6474	2.6484	2.6493	2.6503	2.6513	2.6522
	7	30	2.6532	2.6542	2.6551	2.6561	2.6571	2.6580	2.6590	2.6599	2.6609	2.6618
	7	40	2.6628	2.6637	2.6646	2.6656	2.6665	2.6675	2.6684	2.6693	2.6702	2.6712
	7	50	2.6721	2.6730	2.6730	2.6749	2.6758	2.6767	2.6776	2.6785	2.6794	2.6803
0	8	0	2.6812	2.6821	2.6830	2.6839	2.6848	2.6857	2.6866	2.6875	2.6884	2.6893
	8	10	2.6902	2.6911	2.6920	2.6928	2.6937	2.6946	2.6955	2.6964	2.6972	2.6981
	8	20	2.6990	2.6998	2.7007	2.7016	2.7024	2.7033	2.7042	2.7050	2.7059	2.7067
	8	30	2.7076	2.7084	2.7093	2.7101	2.7110	2.7118	2.7126	2.7135	2.7143	2.7152
	8	40	2.7160	2.7168	2.7177	2.7185	2.7193	2.7202	2.7210	2.7218	2.7226	2.7235
	8	50	2.7243	2.7251	2.7259	2.7267	2.7275	2.7284	2.7292	2.7300	2.7308	2.7316
0	9	0	2.7324	2.7332	2.7340	2.7348	2.7356	2.7364	2.7372	2.7380	2.7388	2.7396
	9	10	2.7404	2.7412	2.7419	2.7427	2.7435	2.7443	2.7451	2.7459	2.7466	2.7474
	9	20	2.7482	2.7490	2.7497	2.7505	2.7513	2.7520	2.7528	2.7536	2.7543	2.7551
	9	30	2.7559	2.7566	2.7574	2.7582	2.7589	2.7597	2.7604	2.7612	2.7619	2.7627
	9	40	2.7634	2.7642	2.7649	2.7657	2.7664	2.7672	2.7679	2.7686	2.7694	2.7701
	9	50	2.7709	2.7716	2.7723	2.7731	2.7738	2.7745	2.7752	2.7760	2.7767	2.7774

TABLE VII.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
0h.	10m.	0s.	2.7782	2.7789	2.7796	2.7803	2.7810	2.7818	2.7825	2.7832	2.7839	2.7846
	10	10	2.7853	2.7860	2.7868	2.7875	2.7882	2.7889	2.7896	2.7903	2.7910	2.7917
	10	20	2.7924	2.7931	2.7938	2.7945	2.7952	2.7959	2.7966	2.7973	2.7980	2.7987
	10	30	2.7993	2.8000	2.8007	2.8014	2.8021	2.8028	2.8035	2.8041	2.8048	2.8055
	10	40	2.8062	2.8069	2.8075	2.8082	2.8089	2.8096	2.8102	2.8109	2.8116	2.8122
	10	50	2.8129	2.8136	2.8142	2.8149	2.8156	2.8162	2.8169	2.8176	2.8182	2.8189
0	11	0	2.8195	2.8202	2.8209	2.8215	2.8222	2.8228	2.8235	2.8241	2.8248	2.8254
	11	10	2.8261	2.8267	2.8274	2.8280	2.8287	2.8293	2.8299	2.8306	2.8312	2.8319
	11	20	2.8325	2.8331	2.8338	2.8344	2.8351	2.8357	2.8363	2.8370	2.8376	2.8382
	11	30	2.8388	2.8395	2.8401	2.8407	2.8414	2.8420	2.8426	2.8432	2.8439	2.8445
	11	40	2.8451	2.8457	2.8463	2.8470	2.8476	2.8482	2.8488	2.8494	2.8500	2.8506
	11	50	2.8513	2.8519	2.8525	2.8531	2.8537	2.8543	2.8549	2.8555	2.8561	2.8567
0	12	0	2.8573	2.8579	2.8585	2.8591	2.8597	2.8603	2.8609	2.8615	2.8621	2.8627
	12	10	2.8633	2.8639	2.8645	2.8651	2.8657	2.8663	2.8669	2.8675	2.8681	2.8686
	12	20	2.8692	2.8698	2.8704	2.8710	2.8716	2.8722	2.8727	2.8733	2.8739	2.8745
	12	30	2.8751	2.8756	2.8762	2.8768	2.8774	2.8779	2.8785	2.8791	2.8797	2.8802
	12	40	2.8808	2.8814	2.8820	2.8825	2.8831	2.8837	2.8842	2.8848	2.8854	2.8859
	12	50	2.8865	2.8871	2.8876	2.8882	2.8887	2.8893	2.8899	2.8904	2.8910	2.8915
0	13	0	2.8921	2.8927	2.8932	2.8938	2.8943	2.8949	2.8954	2.8960	2.8965	2.8971
	13	10	2.8976	2.8982	2.8987	2.8993	2.8998	2.9004	2.9009	2.9015	2.9020	2.9025
	13	20	2.9031	2.9036	2.9042	2.9047	2.9053	2.9058	2.9063	2.9069	2.9074	2.9079
	13	30	2.9085	2.9090	2.9096	2.9101	2.9106	2.9112	2.9117	2.9122	2.9128	2.9133
	13	40	2.9138	2.9143	2.9149	2.9154	2.9159	2.9165	2.9170	2.9175	2.9180	2.9186
	13	50	2.9191	2.9196	2.9201	2.9206	2.9212	2.9217	2.9222	2.9227	2.9232	2.9238
0	14	0	2.9243	2.9248	2.9253	2.9258	2.9263	2.9269	2.9274	2.9279	2.9284	2.9289
	14	10	2.9294	2.9299	2.9304	2.9309	2.9315	2.9320	2.9325	2.9330	2.9335	3.9340
	14	20	2.9345	2.9350	2.9355	2.9360	2.9365	2.9370	2.9375	2.9380	2.9385	2.9390
	14	30	2.9395	2.9400	2.9405	2.9410	2.9415	2.9420	2.9425	2.9430	2.9435	2.9440
	14	40	2.9445	2.9450	2.9455	2.9460	2.9465	2.9469	2.9474	2.9479	2.9484	2.9489
	14	50	2.9494	2.9499	2.9504	2.9509	2.9513	2.9518	2.9523	2.9528	2.9533	2.9538
0	15	0	2.9542	2.9547	2.9552	2.9557	2.9562	2.9566	2.9571	2.9576	2.9581	2.9586
	15	10	2.9590	2.9595	2.9600	2.9605	2.9609	2.9614	2.9619	2.9624	2.9628	2.9633
	15	20	2.9638	2.9643	2.9647	2.9652	2.9657	2.9661	2.9666	2.9671	2.9675	2.9680
	15	30	2.9685	2.9689	2.9694	2.9699	2.9703	2.9708	2.9713	2.9717	2.9722	2.9727
	15	40	2.9731	2.9736	2.9741	2.9745	2.9750	2.9754	2.9759	2.9763	2.9768	2.9773
	15	50	2.9777	2.9782	2.9786	2.9791	2.9795	2.9800	2.9805	2.9809	2.9814	2.9818
0	16	0	2.9823	2.9827	2.9832	2.9836	2.9841	2.9845	2.9850	2.9854	2.9859	2.9863
	16	10	2.9868	2.9872	2.9877	2.9881	2.9886	2.9890	2.9894	2.9899	2.9903	2.9908
	16	20	2.9912	2.9917	2.9921	2.9926	2.9930	2.9934	2.9939	2.9943	2.9948	2.9952
	16	30	2.9956	2.9961	2.9965	2.9969	2.9974	2.9978	2.9983	2.9987	2.9991	2.9996
	16	40	3.0000	3.0004	3.0009	3.0013	3.0017	3.0022	3.0026	3.0030	3.0035	3.0039
	16	50	3.0043	3.0048	3.0052	3.0056	3.0060	3.0065	3.0069	3.0073	3.0077	3.0082
0	17	0	3.0086	3.0090	3.0095	3.0099	3.0103	3.0107	3.0111	3.0116	3.0120	3.0124
	17	10	3.0128	3.0133	3.0137	3.0141	3.0145	3.0149	3.0154	3.0158	3.0162	3.0166
	17	20	3.0170	3.0175	3.0179	3.0183	3.0187	3.0191	3.0195	3.0199	3.0204	3.0208
	17	30	3.0212	3.0216	3.0220	3.0224	3.0228	3.0233	3.0237	3.0241	3.0245	3.0249
	17	40	3.0253	3.0257	3.0261	3.0265	3.0269	3.0273	3.0278	3.0282	3.0286	3.0290
	17	50	3.0294	3.0298	3.0302	3.0306	3.0310	3.0314	3.0318	3.0322	3.0326	3.0330
0	18	0	3.0334	3.0338	3.0342	3.0346	3.0350	3.0354	3.0358	3.0362	3.0366	3.0370
	18	10	3.0374	3.0378	3.0382	3.0386	3.0390	3.0394	3.0398	3.0402	3.0406	3.0410
	18	20	3.0414	3.0418	3.0422	3.0426	3.0430	3.0434	3.0438	3.0441	3.0445	3.0449
	18	30	3.0453	3.0457	2.0461	3.0465	3.0469	3.0473	3.0477	3.0481	3.0484	3.0488
	18	40	3.0492	3.0496	3.0500	3.0504	3.0508	3.0512	3.0515	3.0519	3.0523	3.0527
	18	50	3.0531	3.0535	3.0538	3.0542	3.0546	3.0550	3.0554	3.0558	3.0561	3.0565
0	19	0	3.0569	3.0573	3.0577	3.0580	3.0584	3.0588	3.0592	3.0596	3.0599	3.0603
	19	10	3.0607	3.0611	3.0615	3.0618	3.0622	3.0626	3.0630	3.0633	3.0637	3.0641
	19	20	3.0645	3.0648	3.0652	3.0656	3.0660	3.0663	3.0667	3.0671	3.0674	3.0678
	19	30	3.0682	3.0686	3.0689	3.0693	3.0697	3.0700	3.0704	3.0708	3.0711	3.0715
	19	40	3.0719	3.0722	3.0726	3.0730	3.0734	3.0737	3.0741	3.0745	3.0748	3.0752
	19	50	3.0755	3.0759	3.0763	3.0766	3.0770	3.0774	3.0777	3.0781	3.0785	3.0788

TABLE VII.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
° 0h.	′ 20m.	″ 0s.	3.0792	3.0795	3.0799	3.0803	3.0806	3.0810	3.0813	3.0817	3.0821	3.0824
	20	10	3.0828	3.0831	3.0835	3.0839	3.0842	3.0846	3.0849	3.0853	3.0856	3.0860
	20	20	3.0864	3.0867	3.0871	3.0874	3.0878	3.0881	3.0885	3.0888	3.0892	3.0896
	20	30	3.0899	3.0903	3.0906	3.0010	3.0913	3.0917	3.0920	3.0924	3.0927	3.0931
	20	40	3.0934	3.0938	3.0941	3.0945	3.0948	3.0952	3.0955	3.0959	3.0962	3.0966
	20	50	3.0969	3.0973	3.0976	3.0980	3.0983	3.0986	3.0990	3.0993	3.0997	3.1000
0	21	0	3.1004	3.1007	3.1011	3.1014	3.1017	3.1021	3.1024	3.1028	3.1031	3.1035
	21	10	3.1038	3.1041	3.1045	3.1048	3.1052	3.1055	3.1059	3.1062	3.1065	3.1069
	21	20	3.1072	3.1075	3.1079	3.1082	3.1086	3.1089	3.1092	3.1096	3.1099	3.1103
	21	30	3.1106	3.1109	3.1113	3.1116	3.1119	3.1123	3.1126	3.1129	3.1133	3.1136
	21	40	3.1139	3.1143	3.1146	3.1149	3.1153	3.1156	3.1159	3.1163	3.1166	3.1169
	21	50	3.1173	3.1176	3.1179	3.1183	3.1186	3.1189	3.1193	3.1196	3.1199	3.1202
0	22	0	3.1206	3.1209	3.1212	3.1216	3.1219	3.1222	3.1225	3.1229	3.1232	3.1235
	22	10	3.1239	3.1242	3.1245	3.1248	3.1252	3.1255	3.1258	3.1261	3.1265	3.1268
	22	20	3.1271	3.1274	3.1278	3.1281	3.1284	3.1287	3.1290	3.1294	3.1297	3.1300
	22	30	3.1303	3.1307	3.1310	3.1313	3.1316	3.1319	3.1323	3.1326	3.1329	3.1332
	22	40	3.1335	3.1339	3.1342	3.1345	3.1348	3.1351	3.1355	3.1358	3.1361	3.1364
	22	50	3.1367	3.1370	3.1374	3.1377	3.1380	3.1383	3.1386	3.1389	3.1392	3.1396
0	23	0	3.1399	3.1402	3.1405	3.1408	3.1411	3.1414	3.1418	3.1421	3.1424	3.1427
	23	10	3.1430	3.1433	3.1436	3.1440	3.1443	3.1446	3.1449	3.1452	3.1455	3.1458
	23	20	3.1461	3.1464	3.1467	3.1471	3.1474	3.1477	3.1480	3.1483	3.1486	3.1489
	23	30	3.1492	3.1495	3.1498	3.1501	3.1504	3.1508	3.1511	3.1514	3.1517	3.1520
	23	40	3.1523	3.1526	3.1529	3.1532	3.1535	3.1538	3.1541	3.1544	3.1547	3.1550
	23	50	3.1553	3.1556	3.1559	3.1562	3.1565	3.1569	3.1572	3.1575	3.1578	3.1581
0	24	0	3.1584	3.1587	3.1590	3.1593	3.1596	3.1599	3.1602	3.1605	3.1608	3.1611
	24	10	3.1614	3.1617	3.1620	3.1623	3.1626	3.1629	3.1632	3.1635	3.1638	3.1641
	24	20	3.1644	3.1647	3.1649	3.1652	3.1655	3.1658	3.1661	3.1664	3.1667	3.1670
	24	30	3.1673	3.1676	3.1679	3.1682	3.1685	3.1688	3.1691	3.1694	3.1697	3.1700
	24	40	3.1703	3.1706	3.1708	3.1711	3.1714	3.1717	3.1720	3.1723	3.1726	3.1729
	24	50	3.1732	3.1735	3.1738	3.1741	3.1744	3.1746	3.1749	3.1752	3.1755	3.1758
0	25	0	3.1761	3.1764	3.1767	3.1770	3.1772	3.1775	3.1778	3.1781	3.1784	3.1787
	25	10	3.1790	3.1793	3.1796	3.1798	3.1801	3.1804	3.1807	3.1810	3.1813	3.1816
	25	20	3.1818	3.1821	3.1824	3.1827	3.1830	3.1833	3.1836	3.1838	3.1841	3.1844
	25	30	3.1847	3.1850	3.1853	3.1855	3.1858	3.1861	3.1864	3.1867	3.1870	3.1872
	25	40	3.1875	3.1878	3.1881	3.1884	3.1886	3.1889	3.1892	3.1895	3.1898	3.1901
	25	50	3.1903	3.1906	3.1909	3.1912	3.1915	3.1917	3.1920	3.1923	3.1926	3.1928
0	26	0	3.1931	3.1934	3.1937	3.1940	3.1942	3.1945	3.1948	3.1951	3.1953	3.1956
	26	10	3.1959	3.1962	3.1965	3.1967	3.1970	3.1973	3.1976	3.1978	3.1981	3.1984
	26	20	3.1987	3.1989	3.1992	3.1995	3.1998	3.2000	3.2003	3.2006	3.2009	3.2011
	26	30	3.2014	3.2017	3.2019	3.2022	3.2025	3.2028	3.2030	3.2033	3.2036	3.2038
	26	40	3.2041	3.2044	3.2047	3.2049	3.2052	3.2055	3.2057	3.2060	3.2063	3.2066
	26	50	3.2068	3.2071	3.2074	3.2076	3.2079	3.2082	3.2084	3.2087	3.2090	3.2092
0	27	0	3.2095	3.2098	3.2101	3.2103	3.2106	3.2109	3.2111	3.2114	3.2117	3.2119
	27	10	3.2122	3.2125	3.2127	3.2130	3.2133	3.2135	3.2138	3.2140	3.2143	3.2146
	27	20	3.2148	3.2151	3.2154	3.2156	3.2159	3.2162	3.2164	3.2167	3.2170	3.2172
	27	30	3.2175	3.2177	3.2180	3.2183	3.2185	3.2188	3.2191	3.2193	3.2196	3.2198
	27	40	3.2201	3.2204	3.2206	3.2209	3.2212	3.2214	3.2217	3.2219	3.2222	3.2225
	27	50	3.2227	3.2230	3.2232	3.2235	3.2238	3.2240	3.2243	3.2245	3.2248	3.2250
0	28	0	3.2253	3.2256	3.2258	3.2261	3.2263	3.2266	3.2269	3.2271	3.2274	3.2276
	28	10	3.2279	3.2281	3.2284	3.2287	3.2289	3.2292	3.2294	3.2297	3.2299	3.2302
	28	20	3.2304	3.2307	3.2310	3.2312	3.2315	3.2317	3.2320	3.2322	3.2325	3.2327
	28	30	3.2330	3.2333	3.2335	3.2338	3.2340	3.2343	3.2345	3.2348	3.2350	3.2353
	28	40	3.2355	3.2358	3.2360	3.2363	3.2365	3.2368	3.2370	3.2373	3.2375	3.2378
	28	50	3.2380	3.2383	3.2385	3.2388	3.2390	3.2393	3.2395	3.2398	3.2400	3.2403
0	29	0	3.2405	3.2408	3.2410	3.2413	3.2415	3.2418	3.2420	3.2423	3.2425	3.2428
	29	10	3.2430	3.2433	3.2435	3.2438	3.2440	3.2443	3.2445	3.2448	3.2450	3.2453
	29	20	3.2455	3.2458	3.2460	3.2463	3.2465	3.2467	3.2470	3.2472	3.2475	3.2477
	29	30	3.2480	3.2482	3.2485	3.2487	3.2490	3.2492	3.2494	3.2497	3.2499	3.2502
	29	40	3.2504	3.2507	3.2509	3.2512	3.2514	3.2516	3.2519	3.2521	3.2524	3.2526
	29	50	3.2529	3.2531	3.2533	3.2536	3.2538	3.2541	3.2543	3.2545	3.2548	3.2550

TABLE VII.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
0h.	30m.	0s.	3.2553	3.2555	3.2558	3.2560	3.2562	3.2565	3.2567	3.2570	3.2572	3.2574
	30	10	3.2577	3.2579	3.2582	3.2584	3.2586	3.2589	3.2591	3.2594	3.2596	3.2598
	30	20	3.2601	3.2603	3.2605	3.2608	3.2610	3.2613	3.2615	3.2617	3.2620	3.2622
	30	30	3.2625	3.2627	3.2629	3.2632	3.2634	3.2636	3.2639	3.2641	3.2643	3.2646
	30	40	3.2648	3.2651	3.2653	3.2655	3.2658	3.2660	3.2662	3.2665	3.2667	3.2669
	30	50	3.2672	3.2674	3.2676	3.2679	3.2681	3.2683	3.2686	3.2688	3.2690	3.2693
0	31	0	3.2695	3.2697	3.2700	3.2702	3.2704	3.2707	3.2709	3.2711	3.2714	3.2716
	31	10	3.2718	3.2721	3.2723	3.2725	3.2728	3.2730	3.2732	3.2735	3.2737	3.2739
	31	20	3.2742	3.2744	3.2746	3.2749	3.2751	3.2753	3.2755	3.2758	3.2760	3.2762
	31	30	3.2765	3.2767	3.2769	3.2772	3.2774	3.2776	3.2778	3.2781	3.2783	3.2785
	31	40	3.2788	3.2790	3.2792	3.2794	3.2797	3.2799	3.2801	3.2804	3.2806	3.2808
	31	50	3.2810	3.2813	3.2815	3.2817	3.2819	3.2822	3.2824	3.2826	3.2828	3.2831
0	32	0	3.2833	3.2835	3.2838	3.2840	3.2842	3.2844	3.2847	3.2849	3.2851	3.2853
	32	10	3.2856	3.2858	3.2860	3.2862	3.2865	3.2867	3.2869	3.2871	3.2874	3.2876
	32	20	3.2878	3.2880	3.2882	3.2885	3.2887	3.2889	3.2891	3.2894	3.2896	3.2898
	32	30	3.2900	3.2903	3.2905	3.2907	3.2909	3.2911	3.2914	3.2916	3.2918	3.2920
	32	40	3.2923	3.2925	3.2927	3.2929	3.2931	3.2934	3.2936	3.2938	3.2940	3.2942
	32	50	3.2945	3.2947	3.2949	3.2951	3.2953	3.2956	3.2958	3.2960	3.2962	3.2964
0	33	0	3.2967	3.2969	3.2971	3.2973	3.2975	3.2978	3.2980	3.2982	3.2984	3.2986
	33	10	3.2989	3.2991	3.2993	3.2995	3.2997	3.2999	3.3002	3.3004	3.3006	3.3008
	33	20	3.3010	3.3012	3.3015	3.3017	3.3019	3.3021	3.3023	3.3025	3.3028	3.3030
	33	30	3.3032	3.3034	3.3036	3.3038	3.3041	3.3043	3.3045	3.3047	3.3049	3.3051
	33	40	3.3054	3.3056	3.3058	3.3060	3.3062	3.3064	3.3066	3.3069	3.3071	3.3073
	33	50	3.3075	3.3077	3.3079	3.3081	3.3084	3.3086	3.3088	3.3090	3.3092	3.3094
0	34	0	3.3096	3.3098	3.3101	3.3103	3.3105	3.3107	3.3109	3.3111	3.3113	3.3115
	34	10	3.3118	3.3120	3.3122	3.3124	3.3126	3.3128	3.3130	3.3132	3.3134	3.3137
	34	20	3.3139	3.3141	3.3143	3.3145	3.3147	3.3149	3.3151	3.3153	3.3156	3.3158
	34	30	3.3160	3.3162	3.3164	3.3166	3.3168	3.3170	3.3172	3.3174	3.3176	3.3179
	34	40	3.3181	3.3183	3.3185	3.3187	3.3189	3.3191	3.3193	3.3195	3.3197	3.3199
	34	50	3.3201	3.3204	3.3206	3.3208	3.3210	3.3212	3.3214	3.3216	3.3218	3.3220
0	35	0	3.3222	3.3224	3.3226	3.3228	3.3230	3.3233	3.3235	3.3237	3.3239	3.3241
	35	10	3.3243	3.3245	3.3247	3.3249	3.3251	3.3253	3.3255	3.3257	3.3259	3.3261
	35	20	3.3263	3.3265	3.3267	3.3269	3.3272	3.3274	3.3276	3.3278	3.3280	3.3282
	35	30	3.3284	3.3286	3.3288	3.3290	3.3292	3.3294	3.3296	3.3298	3.3300	3.3302
	35	40	3.3304	3.3306	3.3308	3.3310	3.3312	3.3314	3.3316	3.3318	3.3320	3.3322
	35	50	3.3324	3.3326	3.3328	3.3330	3.3332	3.3334	3.3336	3.3339	3.3341	3.3343
0	36	0	3.3345	3.3347	3.3349	3.3351	3.3353	3.3355	3.3357	3.3359	3.3361	3.3363
	36	10	3.3365	3.3367	3.3369	3.3371	3.3373	3.3375	3.3377	3.3379	3.3381	3.3383
	36	20	3.3385	3.3387	3.3389	3.3391	3.3393	3.3395	3.3397	3.3398	3.3400	3.3402
	36	30	3.3404	3.3406	3.3408	3.3410	3.3412	3.3414	3.3416	3.3418	3.3420	3.3422
	36	40	3.3424	3.3426	3.3428	3.3430	3.3432	3.3434	3.3436	3.3438	3.3440	3.3442
	36	50	3.3444	3.3446	3.3448	3.3450	3.3452	3.3454	3.3456	3.3458	3.3460	3.3462
0	37	0	3.3464	3.3465	3.3467	3.3469	3.3471	3.3473	3.3475	3.3477	3.3479	3.3481
	37	10	3.3483	3.3485	3.3487	3.3489	3.3491	3.3493	3.3495	3.3497	3.3499	3.3501
	37	20	3.3502	3.3504	3.3506	3.3508	3.3510	3.3512	3.3514	3.3516	3.3518	3.3520
	37	30	3.3522	3.3524	3.3526	3.3528	3.3530	3.3531	3.3533	3.3535	3.3537	3.3539
	37	40	3.3541	3.3543	3.3545	3.3547	3.3549	3.3551	3.3553	3.3555	3.3556	3.3558
	37	50	3.3560	3.3562	3.3564	3.3566	3.3568	3.3570	3.3572	3.3574	3.3576	3.3577
0	38	0	3.3579	3.3581	3.3583	3.3585	3.3587	3.3589	3.3591	3.3593	3.3595	3.3596
	38	10	3.3598	3.3600	3.3602	3.3604	3.3606	3.3608	3.3610	3.3612	3.3614	3.3615
	38	20	3.3617	3.3619	3.3621	3.3623	3.3625	3.3627	3.3629	3.3630	3.3632	3.3634
	38	30	3.3636	3.3638	3.3640	3.3642	3.3644	3.3646	3.3647	3.3649	3.3651	3.3653
	38	40	3.3655	3.3657	3.3659	3.3660	3.3662	3.3664	3.3666	3.3668	3.3670	3.3672
	38	50	3.3674	3.3675	3.3677	3.3679	3.3681	3.3683	3.3685	3.3687	3.3688	3.3690
0	39	0	3.3692	3.3694	3.3696	3.3698	3.3700	3.3701	3.3703	3.3705	3.3707	3.3709
	39	10	3.3711	3.3713	3.3714	3.3716	3.3718	3.3720	3.3722	3.3724	3.3725	3.3727
	39	20	3.3729	3.3731	3.3733	3.3735	3.3736	3.3738	3.3740	3.3742	3.3744	3.3746
	39	30	3.3747	3.3749	3.3751	3.3753	3.3755	3.3757	3.3758	3.3760	3.3762	3.3764
	39	40	3.3766	3.3768	3.3769	3.3771	3.3773	3.3775	3.3777	3.3779	3.3780	3.3782
	39	50	3.3784	3.3786	3.3788	3.3789	3.3791	3.3793	3.3795	3.3797	3.3798	3.3800

TABLE VII.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0"	1"	2"	3"	4"	5"	6"	7"	8"	9"
0h. 40m. 0s.	3.3802	3.3804	3.3806	3.3808	3.3809	3.3811	3.3813	3.3815	3.3817	3.3818
40 10	3.3820	3.3822	3.3824	3.3826	3.3827	3.3829	3.3831	3.3833	3.3835	3.3836
40 20	3.3838	3.3840	3.3842	3.3844	3.3845	3.3847	3.3849	3.3851	3.3852	3.3854
40 30	3.3856	3.3858	3.3860	3.3861	3.3863	3.3865	3.3867	3.3869	3.3870	3.3872
40 40	3.3874	3.3876	3.3877	3.3879	3.3881	3.3883	3.3885	3.3886	3.3888	3.3890
40 50	3.3892	3.3893	3.3895	3.3897	3.3899	3.3901	3.3902	3.3904	3.3906	3.3908
0 41 0	3.3909	3.3911	3.3913	3.3915	3.3916	3.3918	3.3920	3.3922	3.3923	3.3925
41 10	3.3927	3.3929	3.3930	3.3932	3.3934	3.3936	3.3938	3.3939	3.3941	3.3943
41 20	3.3945	3.3946	3.3948	3.3950	3.3952	3.3953	3.3955	3.3957	3.3959	3.3960
41 30	3.3962	3.3964	3.3965	3.3967	3.3969	3.3971	3.3972	3.3974	3.3976	3.3978
41 40	3.3979	3.3981	3.3983	3.3985	3.3986	3.3988	3.3990	3.3992	3.3993	3.3995
41 50	3.3997	3.3998	3.4000	3.4002	3.4004	3.4005	3.4007	3.4009	3.4011	3.4012
0 42 0	3.4014	3.4016	3.4017	3.4019	3.4021	3.4023	3.4024	3.4026	3.4028	3.4029
42 10	3.4031	3.4033	3.4035	3.4036	3.4038	3.4040	3.4041	3.4043	3.4045	3.4047
42 20	3.4048	3.4050	3.4052	3.4053	3.4055	3.4057	3.4059	3.4060	3.4062	3.4064
42 30	3.4065	3.4067	3.4069	3.4071	3.4072	3.4074	3.4076	3.4077	3.4079	3.4081
42 40	3.4082	3.4084	3.4086	3.4087	3.4089	3.4091	3.4093	3.4094	3.4096	3.4098
42 50	3.4099	3.4101	3.4103	3.4104	3.4106	3.4108	3.4109	3.4111	3.4113	3.4115
0 43 0	3.4116	3.4118	3.4120	3.4121	3.4123	3.4125	3.4126	3.4128	3.4130	3.4131
43 10	3.4133	3.4135	3.4136	3.4138	3.4140	3.4141	3.4143	3.4145	3.4146	3.4148
43 20	3.4150	3.4151	3.4153	3.4155	3.4156	3.4158	3.4160	3.4161	3.4163	3.4165
43 30	3.4166	3.4168	3.4170	3.4171	3.4173	3.4175	3.4176	3.4178	3.4180	3.4181
43 40	3.4183	3.4185	3.4186	3.4188	3.4190	3.4191	3.4193	3.4195	3.4196	3.4198
43 50	3.4200	3.4201	3.4203	3.4205	3.4206	3.4208	3.4209	3.4211	3.4213	3.4214
0 44 0	3.4216	3.4218	3.4219	3.4221	3.4223	3.4224	3.4226	3.4228	3.4229	3.4231
44 10	3.4232	3.4234	3.4236	3.4237	3.4239	3.4241	3.4242	3.4244	3.4246	3.4247
44 20	3.4249	3.4250	3.4252	3.4254	3.4255	3.4257	3.4259	3.4260	3.4262	3.4263
44 30	3.4265	3.4267	3.4268	3.4270	3.4272	3.4273	3.4275	3.4276	3.4278	3.4280
44 40	3.4281	3.4283	3.4285	3.4286	3.4288	3.4289	3.4291	3.4293	3.4294	3.4296
44 50	3.4298	3.4299	3.4301	3.4302	3.4304	3.4306	3.4307	3.4309	3.4310	3.4312
0 45 0	3.4314	3.4315	3.4317	3.4318	3.4320	3.4322	3.4323	3.4325	3.4326	3.4328
45 10	3.4330	3.4331	3.4333	3.4334	3.4336	3.4338	3.4339	3.4341	3.4342	3.4344
45 20	3.4346	3.4347	3.4349	3.4350	3.4352	3.4354	3.4355	3.4357	3.4358	3.4360
45 30	3.4362	3.4363	3.4365	3.4366	3.4368	3.4370	3.4371	3.4373	3.4374	3.4376
45 40	3.4378	3.4379	3.4381	3.4382	3.4384	3.4385	3.4387	3.4389	3.4390	3.4392
45 50	3.4393	3.4395	3.4396	3.4398	3.4400	3.4401	3.4403	3.4404	3.4406	3.4408
0 46 0	3.4409	3.4411	3.4412	3.4414	3.4415	3.4417	3.4419	3.4420	3.4422	3.4423
46 10	3.4425	3.4426	3.4428	3.4429	3.4431	3.4433	3.4434	3.4436	3.4437	3.4439
46 20	3.4440	3.4442	3.4444	3.4445	3.4447	3.4448	3.4450	3.4451	3.4453	3.4454
46 30	3.4456	3.4458	3.4459	3.4461	3.4462	3.4464	3.4465	3.4467	3.4468	3.4470
46 40	3.4472	3.4473	3.4475	3.4476	3.4478	3.4479	3.4481	3.4482	3.4484	3.4486
46 50	3.4487	3.4489	3.4490	3.4492	3.4493	3.4495	3.4496	3.4498	3.4499	3.4501
0 47 0	3.4502	3.4504	3.4506	3.4507	3.4509	3.4510	3.4512	3.4513	3.4515	3.4516
47 10	3.4518	3.4519	3.4521	3.4522	3.4524	3.4526	3.4527	3.4529	3.4530	3.4532
47 20	3.4533	3.4535	3.4536	3.4538	3.4539	3.4541	3.4542	3.4544	3.4545	3.4547
47 30	3.4548	3.4550	3.4551	3.4553	3.4555	3.4556	3.4558	3.4559	3.4561	3.4562
47 40	3.4564	3.4565	3.4567	3.4568	3.4570	3.4571	3.4573	3.4574	3.4576	3.4577
47 50	3.4579	3.4580	3.4582	3.4583	3.4585	3.4586	3.4588	3.4589	3.4591	3.4592
0 48 0	3.4594	3.4595	3.4597	3.4598	3.4600	3.4601	3.4603	3.4604	3.4606	3.4607
48 10	3.4609	3.4610	3.4612	3.4613	3.4615	3.4616	3.4618	3.4619	3.4621	3.4622
48 20	3.4624	3.4625	3.4627	3.4628	3.4630	3.4631	3.4633	3.4634	3.4636	3.4637
48 30	3.4639	3.4640	3.4642	3.4643	3.4645	3.4646	3.4648	3.4649	3.4651	3.4652
48 40	3.4654	3.4655	3.4657	3.4658	3.4660	3.4661	3.4663	3.4664	3.4666	3.4667
48 50	3.4669	3.4670	3.4672	3.4673	3.4675	3.4676	3.4678	3.4679	3.4681	3.4682
0 49 0	3.4683	3.4685	3.4686	3.4688	3.4689	3.4691	3.4692	3.4694	3.4695	3.4697
49 10	3.4698	3.4700	3.4701	3.4703	3.4704	3.4706	3.4707	3.4709	3.4710	3.4711
49 20	3.4713	3.4714	3.4716	3.4717	3.4719	3.4720	3.4722	3.4723	3.4725	3.4726
49 30	3.4728	3.4729	3.4730	3.4732	3.4733	3.4735	3.4736	3.4738	3.4739	3.4741
49 40	3.4742	3.4744	3.4745	3.4747	3.4748	3.4749	3.4751	3.4752	3.4754	3.4755
49 50	3.4757	3.4758	3.4760	3.4761	3.4763	3.4764	3.4765	3.4767	3.4768	3.4770

TABLE VII.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			$\overset{\prime\prime}{0}$	$\overset{\prime\prime}{1}$	$\overset{\prime\prime}{2}$	$\overset{\prime\prime}{3}$	$\overset{\prime\prime}{4}$	$\overset{\prime\prime}{5}$	$\overset{\prime\prime}{6}$	$\overset{\prime\prime}{7}$	$\overset{\prime\prime}{8}$	$\overset{\prime\prime}{9}$
$\overset{\circ}{0}$h.	50m.	$\overset{\prime\prime}{0}$s.	3.4771	3.4773	3.4774	3.4776	3.4777	3.4778	3.4780	3.4781	3.4783	3.4784
	50	10	3.4786	3.4787	3.4789	3.4790	3.4791	3.4793	3.4794	3.4796	3.4797	3.4799
	50	20	3.4800	3.4802	3.4803	3.4804	3.4806	3.4807	3.4809	3.4810	3.4812	3.4813
	50	30	3.4814	3.4816	3.4817	3.4819	3.4820	3.4822	3.4823	3.4824	3.4826	3.4827
	50	40	3.4829	3.4830	3.4832	3.4833	3.4834	3.4836	3.4837	3.4839	3.4840	3.4842
	50	50	3.4843	3.4844	3.4846	3.4847	3.4849	3.4850	3.4852	3.4853	3.4854	3.4856
0	51	0	3.4857	3.4859	3.4860	3.4861	3.4863	3.4864	3.4866	3.4867	3.4869	3.4870
	51	10	3.4871	3.4873	3.4874	3.4876	3.4877	3.4878	3.4880	3.4881	3.4883	3.4884
	51	20	3.4886	3.4887	3.4888	3.4890	3.4891	3.4893	3.4894	3.4895	3.4897	3.4898
	51	30	3.4900	3.4901	3.4902	3.4904	3.4905	3.4907	3.4908	3.4909	3.4911	3.4912
	51	40	3.4914	3.4915	3.4916	3.4918	3.4919	3.4921	3.4922	3.4923	3.4925	3.4926
	51	50	3.4928	3.4929	3.4930	3.4932	3.4933	3.4935	3.4936	3.4937	3.4939	3.4940
0	52	0	3.4942	3.4943	3.4944	3.4946	3.4947	3.4949	3.4950	3.4951	3.4953	3.4954
	52	10	3.4955	3.4957	3.4958	3.4960	3.4961	3.4962	3.4964	3.4965	3.4967	3.4968
	52	20	3.4969	3.4971	3.4972	3.4973	3.4975	3.4976	3.4978	3.4979	3.4980	3.4982
	52	30	3.4983	3.4984	3.4986	3.4987	3.4989	3.4990	3.4991	3.4993	3.4994	3.4995
	52	40	3.4997	3.4998	3.5000	3.5001	3.5002	3.5904	3.5005	3.5006	3.5008	3.5009
	52	50	3.5011	3.5012	3.5013	3.5015	3.5016	3.5017	3.5019	3.5020	3.5022	3.5023
0	53	0	3.5024	3.5026	3.5027	3.5028	3.5030	3.5031	3.5032	3.5034	3.5035	3.5037
	53	10	3.5038	3.5039	3.5041	3.5042	3.5043	3.5045	3.5046	3.5047	3.5049	3.5050
	53	20	3.5051	3.5053	3.5054	3.5056	3.5057	3.5058	3.5060	3.5061	3.5062	3.5064
	53	30	3.5065	3.5066	3.5068	3.5069	3.5070	3.5072	3.5073	3.5075	3.5076	3.5077
	53	40	3.5079	3.5080	3.5081	3.5083	3.5084	3.5085	3.5087	3.5088	3.5089	3.5091
	53	50	3.5092	3.5093	3.5095	3.5096	3.5097	3.5099	3.5100	3.5101	3.5103	3.5104
0	54	0	3.5105	3.5107	3.5108	3.5109	3.5111	3.5112	3.5113	3.5115	3.5116	3.5117
	54	10	3.5119	3.5120	3.5122	3.5123	3.5124	3.5126	3.5127	3.5128	3.5130	3.5131
	54	20	3.5132	3.5134	3.5135	3.5136	3.5138	3.5139	3.5140	3.5141	3.5143	3.5144
	54	30	3.5145	3.5147	3.5148	3.5149	3.5151	3.5152	3.5153	3.5155	3.5156	3.5157
	54	40	3.5159	3.5160	3.5161	3.5163	3.5164	3.5165	3.5167	3.5168	3.5169	3.5171
	54	50	3.5172	3.5173	3.5175	3.5176	3.5177	3.5179	3.5180	3.5181	3.5183	3.5184
0	55	0	3.5185	3.5186	3.5188	3.5189	3.5190	3.5192	3.5193	3.5194	3.5196	3.5197
	55	10	3.5198	3.5200	3.5201	3.5202	3.5204	3.5205	3.5206	3.5207	3.5209	3.5210
	55	20	3.5211	3.5213	3.5214	3.5215	3.5217	3.5218	3.5219	3.5221	3.5222	3.5223
	55	30	3.5224	3.5226	3.5227	3.5228	3.5230	3.5231	3.5232	3.5234	3.5235	3.5236
	55	40	3.5237	3.5239	3.5240	3.5241	3.5243	3.5244	3.5245	3.5247	3.5248	3.5249
	55	50	3.5250	3.5252	3.5253	3.5254	3.5256	3.5257	3.5258	3.5260	3.5261	3.5262
0	56	0	3.5263	3.5265	3.5266	3.5267	3.5269	3.5270	3.5271	3.5272	3.5274	3.5275
	56	10	3.5276	3.5278	3.5279	3.5280	3.5281	3.5283	3.5284	3.5285	3.5287	3.5288
	56	20	3.5289	3.5290	3.5292	3.5293	3.5294	3.5296	3.5297	3.5298	3.5299	3.5301
	56	30	3.5302	3.5303	3.5305	3.5306	3.5307	3.5308	3.5310	3.5311	3.5312	3.5314
	56	40	3.5315	3.5316	3.5317	3.5319	3.5320	3.5321	3.5322	3.5324	3.5325	3.5326
	56	50	3.5328	3.5329	3.5330	3.5331	3.5333	3.5334	3.5335	3.5336	3.5338	3.5339
0	57	0	3.5340	3.5342	3.5343	3.5344	3.5345	3.5347	3.5348	3.5349	3.5350	3.5352
	57	10	3.5353	3.5354	3.5355	3.5357	3.5358	3.5359	3.5361	3.5362	3.5363	3.5364
	57	20	3.5366	3.5367	3.5368	3.5369	3.5371	3.5372	3.5373	3.5374	3.5376	3.5377
	57	30	3.5378	3.5379	3.5381	3.5382	3.5383	3.5384	3.5386	3.5387	3.5388	3.5390
	57	40	3.5391	3.5392	3.5393	3.5395	3.5396	3.5397	3.5398	3.5400	3.5401	3.5402
	57	50	3.5403	3.5405	3.5406	3.5407	3.5408	3.5410	3.5411	3.5412	3.5413	3.5415
0	58	0	3.5416	3.5417	3.5418	3.5420	3.5421	3.5422	3.5423	3.5425	3.5426	3.5427
	58	10	3.5428	3.5429	3.5431	3.5432	3.5433	3.5434	3.5436	3.5437	3.5438	3.5439
	58	20	3.5441	3.5442	3.5443	3.5444	3.5446	3.5447	3.5448	3.5449	3.5451	3.5452
	58	30	3.5453	3.5454	3.5456	3.5457	3.5458	3.5459	3.5460	3.5462	3.5463	3.5464
	58	40	3.5465	3.5467	3.5468	3.5469	3.5470	3.5472	3.5473	3.5474	3.5475	3.5477
	58	50	3.5478	3.5479	3.5480	3.5481	3.5483	3.5484	3.5485	3.5486	3.5488	3.5489
0	59	0	3.5490	3.5491	3.5492	3.5494	3.5495	3.5496	3.5497	3.5499	3.5500	3.5501
	59	10	3.5502	3.5504	3.5505	3.5506	3.5507	3.5508	3.5510	3.5511	3.5512	3.5513
	59	20	3.5514	3.5516	3.5517	3.5518	3.5519	3.5521	3.5522	3.5523	3.5524	3.5525
	59	30	3.5527	3.5528	3.5529	3.5530	3.5532	3.5533	3.5534	3.5535	3.5536	3.5538
	59	40	3.5539	3.5540	3.5541	3.5542	3.5544	3.5545	3.5546	3.5547	3.5549	3.5550
	59	50	3.5551	3.5552	3.5563	3.5555	3.5556	3.5557	3.5558	3.5559	3.5561	3.5562

TABLE VII.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
1h.	0m.	0s.	3.5563	3.5564	3.5565	3.5567	3.5568	3.5569	3.5570	3.5571	3.5573	3.5574
	0	10	3.5575	3.5576	3.5577	3.5579	3.5580	3.5581	3.5582	3.5583	3.5585	3.5586
	0	20	3.5587	3.5588	3.5589	3.5591	3.5592	3.5593	3.5594	3.5595	3.5597	3.5598
	0	30	3.5599	3.5600	3.5601	3.5603	3.5604	3.5605	3.5606	3.5607	3.5609	3.5610
	0	40	3.5611	3.5612	3.5613	3.5615	3.5616	3.5617	3.5618	3.5619	3.5621	3.5622
	0	50	3.5623	3.5624	3.5625	3.5626	3.5628	3.5629	3.5630	3.5631	3.5632	3.5634
1	1	0	3.5635	3.5636	3.5637	3.5638	3.5640	3.5641	3.5642	3.5643	3.5644	3.5645
	1	10	3.5647	3.5648	3.5649	3.5650	3.5651	3.5653	3.5654	3.5655	3.5656	3.5657
	1	20	3.5658	3.5660	3.5661	3.5662	3.5663	3.5664	3.5666	3.5667	3.5668	3.5669
	1	30	3.5670	3.5671	3.5673	3.5674	3.5675	3.5676	3.5677	3.5678	3.5680	3.5681
	1	40	3.5682	3.5683	3.5684	3.5686	3.5687	3.5688	3.5689	3.5690	3.5691	3.5693
	1	50	3.5694	3.5695	3.5696	3.5697	3.5698	3.5700	3.5701	3.5702	3.5703	3.5704
1	2	0	3.5705	3.5707	3.5708	3.5709	3.5710	3.5711	3.5712	3.5714	3.5715	3.5716
	2	10	3.5717	3.5718	3.5719	3.5721	3.5722	3.5723	3.5724	3.5725	3.5726	3.5728
	2	20	3.5729	3.5730	3.5731	3.5732	3.5733	3.5735	3.5736	3.5737	3.5738	3.5739
	2	30	3.5740	3.5741	3.5743	3.5744	3.5745	3.5746	3.5747	3.5748	3.5750	3.5751
	2	40	3.5752	3.5753	3.5754	3.5755	3.5756	3.5758	3.5759	3.5760	3.5761	3.5762
	2	50	3.5763	3.5765	3.5766	3.5767	3.5768	3.5769	3.5770	3.5771	3.5773	3.5774
1	3	0	3.5775	3.5776	3.5777	3.5778	3.5780	3.5781	3.5782	3.5783	3.5784	3.5785
	3	10	3.5786	3.5788	3.5789	3.5790	3.5791	3.5792	3.5793	3.5794	3.5796	3.5797
	3	20	3.5798	3.5799	3.5800	3.5801	3.5802	3.5804	3.5805	3.5806	3.5807	3.5808
	3	30	3.5809	3.5810	3.5812	3.5813	3.5814	3.5815	3.5816	3.5817	3.5818	3.5819
	3	40	3.5821	3.5822	3.5823	3.5824	3.5825	3.5826	3.5827	3.5829	3.5830	3.5831
	3	50	3.5832	3.5833	3.5834	3.5835	3.5837	3.5838	3.5839	3.5840	3.5841	3.5842
1	4	0	3.5843	3.5844	3.5846	3.5847	3.5848	3.5849	3.5850	3.5851	3.5852	3.5853
	4	10	3.5855	3.5856	3.5857	3.5858	3.5859	3.5860	3.5861	3.5862	3.5864	3.5865
	4	20	3.5866	3.5867	3.5868	3.5869	3.5870	3.5871	3.5873	3.5874	3.5875	3.5876
	4	30	3.5877	3.5878	3.5879	3.5880	3.5882	3.5883	3.5884	3.5885	3.5886	3.5887
	4	40	3.5888	3.5889	3.5891	3.5892	3.5893	3.5894	3.5895	3.5896	3.5897	3.5898
	4	50	3.5899	3.5901	3.5902	3.5903	3.5904	3.5905	3.5906	3.5907	3.5908	3.5910
1	5	0	3.5911	3.5912	3.5913	3.5914	3.5915	3.5916	3.5917	3.5918	3.5920	3.5921
	5	10	3.5922	3.5923	3.5924	3.5925	3.5926	3.5927	3.5928	3.5930	3.5931	3.5932
	5	20	3.5833	3.5934	3.5935	3.5936	3.5937	3.5938	3.5940	3.5941	3.5942	3.5943
	5	30	3.5944	3.5945	3.5946	3.5947	3.5948	3.5949	3.5951	3.5952	3.5953	3.5954
	5	40	3.5955	3.5956	3.5957	3.5958	3.5959	3.5960	3.5962	3.5963	3.5964	3.5965
	5	50	3.5966	3.5967	3.5968	3.5969	3.5970	3.5971	3.5973	3.5974	3.5975	3.5976
1	6	0	3.5977	3.5978	3.5979	3.5980	3.5981	3.5982	3.5984	3.5985	3.5986	3.5987
	6	10	3.5988	3.5989	3.5990	3.5991	3.5992	3.5993	3.5994	3.5996	3.5997	3.5998
	6	20	3.5999	3.6000	3.6001	3.6002	3.6003	3.6004	3.6005	3.6006	3.6008	3.6009
	6	30	3.6010	3.6011	3.6012	3.6013	3.6014	3.6015	3.6016	3.6017	3.6018	3.6020
	6	40	3.6021	3.6022	3.6023	3.6024	3.6025	3.6026	3.6027	3.6028	3.6029	3.6030
	6	50	3.6031	3.6033	3.6034	3.6035	3.6036	3.6037	3.6038	3.6039	3.6040	3.6041
1	7	0	3.6042	3.6043	3.6044	3.6046	3.6047	3.6048	3.6049	3.6050	3.6051	3.6052
	7	10	3.6053	3.6054	3.6055	3.6056	3.6057	3.6058	3.6060	3.6061	3.6062	3.6063
	7	20	3.6064	3.6065	3.6066	3.6067	3.6068	3.6069	3.6070	3.6071	3.6072	3.6073
	7	30	3.6075	3.6076	3.6077	3.6078	3.6079	3.6080	3.6081	3.6082	3.6083	3.6084
	7	40	3.6085	3.6086	3.6087	3.6088	3.6090	3.6091	3.6092	3.6093	3.6094	3.6095
	7	50	3.6096	3.6097	3.6098	3.6099	3.6100	3.6101	3.6102	3.6103	3.6104	3.6106
1	8	0	3.6107	3.6108	3.6109	3.6110	3.6111	3.6112	3.6113	3.6114	3.6115	3.6116
	8	10	3.6117	3.6118	3.6119	3.6120	3.6121	3.6123	3.6124	3.6125	3.6126	3.6127
	8	20	3.6128	3.6129	3.6130	3.6131	3.6132	3.6133	3.6134	3.6135	3.6136	3.6137
	8	30	3.6138	3.6139	3.6141	3.6142	3.6143	3.6144	3.6145	3.6146	3.6147	3.6148
	8	40	3.6149	3.6150	3.6151	3.6152	3.6153	3.6154	3.6155	3.6156	3.6157	3.6158
	8	50	3.6160	3.6161	3.6162	3.6163	3.6164	3.6165	3.6166	3.6167	3.6168	3.6169
1	9	0	3.6170	3.6171	3.6172	3.6173	3.6174	3.6175	3.6176	3.6177	3.6178	3.6179
	9	10	3.6180	3.6182	3.6183	3.6184	3.6185	3.6186	3.6187	3.6188	3.6189	3.6190
	9	20	3.6191	3.6192	3.6193	3.6194	3.6195	3.6196	3.6197	3.6198	3.6199	3.6200
	9	30	3.6201	3.6202	3.6203	3.6204	3.6206	3.6207	3.6208	3.6209	3.6210	3.6211
	9	40	3.6212	3.6213	3.6214	3.6215	3.6216	3.6217	3.6218	3.6219	3.6220	3.6221
	9	50	3.6222	3.6223	3.6224	3.6225	3.6226	3.6227	3.6228	3.6229	3.6230	3.6231

TABLE VII.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
° 1h.	′ 10m.	″ 0s.	3.6232	3.6234	3.6235	3.6236	3.6237	3.6238	3.6239	3.6240	3.6241	3.6242
	10	10	3.6243	3.6244	3.6245	3.6246	3.6247	3.6248	3.6249	3.6250	3.6251	3.6252
	10	20	3.6253	3.6254	3.6255	3.6256	3.6257	3.6258	3.6259	3.6260	3.6261	3.6262
	10	30	3.6263	3.6264	3.6265	3.6266	3.6268	3.6269	3.6270	3.6271	3.6272	3.6273
	10	40	3.6274	3.6275	3.6276	3.6277	3.6278	3.6279	3.6280	3.6281	3.6282	3.6283
	10	50	3.6284	3.6285	3.6286	3.6287	3.6288	3.6289	3.6290	3.6291	3.6292	3.6293
1	11	0	3.6294	3.6295	3.6296	3.6297	3.6298	3.6299	3.6300	3.6301	3.6302	3.6303
	11	10	3.6304	3.6305	3.6306	3.6307	3.6308	3.6309	3.6310	3.6311	3.6312	3.6313
	11	20	3.6314	3.6315	3.6316	3.6317	3.6318	3.6320	3.6321	3.6322	3.6323	3.6324
	11	30	3.6325	3.6326	3.6327	3.6328	3.6329	3.6330	3.6331	3.6332	3.6333	3.6334
	11	40	3.6335	3.6336	3.6337	3.6338	3.6339	3.6340	3.6341	3.6342	3.6343	3.6344
	11	50	3.6345	3.6346	3.6347	3.6348	3.6349	3.6350	3.6351	3.6352	3.6353	3.6354
1	12	0	3.6355	3.6356	3.6357	3.6358	3.6359	3.6360	3.6361	3.6362	3.6363	3.6364
	12	10	3.6365	3.6366	3.6367	3.6368	3.6369	3.6370	3.6371	3.6372	3.6373	3.6374
	12	20	3.6375	3.6376	3.6377	3.6378	3.6379	3.6380	3.6381	3.6382	3.6383	3.6384
	12	30	3.6385	3.6386	3.6387	3.6388	3.6389	3.6390	3.6391	3.6392	3.6393	3.6394
	12	40	3.6395	3.6396	3.6397	3.6398	3.6399	3.6400	3.6401	3.6402	3.6403	3.6404
	12	50	3.6405	3.6406	3.6407	3.6408	3.6409	3.6410	3.6411	3.6412	3.6413	3.6414
1	13	0	3.6415	3.6416	3.6417	3.6418	3.6419	3.6420	3.6421	3.6422	3.6423	3.6424
	13	10	3.6425	3.6426	3.6427	3.6428	3.6429	3.6430	3.6431	3.6432	3.6433	3.6434
	13	20	3.6435	3.6436	3.6437	3.6437	3.6438	3.6439	3.6440	3.6441	3.6442	3.6443
	13	30	3.6444	3.6445	3.6446	3.6447	3.6448	3.6449	3.6450	3.6451	3.6452	3.6453
	13	40	3.6454	3.6455	3.6456	3.6457	3.6458	3.6459	3.6460	3.6461	3.6462	3.6463
	13	50	3.6464	3.6465	3.6466	3.6467	3.6468	3.6469	3.6470	3.6471	3.6472	3.6473
1	14	0	3.6474	3.6475	3.6476	3.6477	3.6478	3.6479	3.6480	3.6481	3.6482	3.6483
	14	10	3.6484	3.6485	3.6486	3.6487	3.6488	3.6488	3.6489	3.6490	3.6491	3.6492
	14	20	3.6493	3.6494	3.6495	3.6496	3.6497	3.6498	3.6499	3.6500	3.6501	3.6502
	14	30	3.6503	3.6504	3.6505	3.6506	3.6507	3.6508	3.6509	3.6510	3.6511	3.6512
	14	40	3.6513	3.6514	3.6515	3.6516	3.6517	3.6518	3.6519	3.6520	3.6521	3.6521
	14	50	3.6522	3.6523	3.6524	3.6525	3.6526	3.6527	3.6528	3.6529	3.6530	3.6531
1	15	0	3.6532	3.6533	3.6534	3.6535	3.6536	3.6537	3.6538	3.6539	3.6540	3.6541
	15	10	3.6542	3.6543	3.6544	3.6545	3.6546	3.6547	3.6548	3.6549	3.6549	3.6550
	15	20	3.6551	3.6552	3.6553	3.6554	3.6555	3.6556	3.6557	3.6558	3.6559	3.6560
	15	30	3.6561	3.6562	3.6563	3.6564	3.6565	3.6566	3.6567	3.6568	3.6569	3.6570
	15	40	3.6571	3.6572	3.6572	3.6573	3.6574	3.6575	3.6576	3.6577	3.6578	3.6579
	15	50	3.6580	3.6581	3.6582	3.6583	3.6584	3.6585	3.6586	3.6587	3.6588	3.6589
1	16	0	3.6590	3.6591	3.6592	3.6593	3.6593	3.6594	3.6595	3.6596	3.6597	3.6598
	16	10	3.6599	3.6600	3.6601	3.6602	3.6603	3.6604	3.6605	3.6606	3.6607	3.6608
	16	20	3.6609	3.6610	3.6611	3.6611	3.6612	3.6613	3.6614	3.6615	3.6616	3.6617
	16	30	3.6618	3.6619	3.6620	3.6621	3.6622	3.6623	3.6624	3.6625	3.6626	3.6627
	16	40	3.6628	3.6629	3.6629	3.6630	3.6631	3.6632	3.6633	3.6634	3.6635	3.6636
	16	50	3.6637	3.6638	3.6639	3.6640	3.6641	3.6642	3.6643	3.6644	3.6645	3.6645
1	17	0	3.6646	3.6647	3.6648	3.6649	3.6650	3.6651	3.6652	3.6653	3.6654	3.6655
	17	10	3.6656	3.6657	3.6658	3.6659	3.6660	3.6660	3.6661	3.6662	3.6663	3.6664
	17	20	3.6665	3.6666	3.6667	3.6668	3.6669	3.6670	3.6671	3.6672	3.6673	3.6674
	17	30	3.6675	3.6675	3.6676	3.6677	3.6678	3.6679	3.6680	3.6681	3.6682	3.6683
	17	40	3.6684	3.6685	3.6686	3.6687	3.6688	3.6689	3.6689	3.6690	3.6691	3.6692
	17	50	3.6693	3.6694	3.6695	3.6696	3.6697	3.6698	3.6699	3.6700	3.6701	3.6702
1	18	0	3.6702	3.6703	3.6704	3.6705	3.6706	3.6707	3.6708	3.6709	3.6710	3.6711
	18	10	3.6712	3.6713	3.6714	3.6715	3.6715	3.6716	3.6717	3.6718	3.6719	3.6720
	18	20	3.6721	3.6722	3.6723	3.6724	3.6725	3.6726	3.6727	3.6727	3.6728	3.6729
	18	30	3.6730	3.6731	3.6732	3.6733	3.6734	3.6735	3.6736	3.6737	3.6738	3.6738
	18	40	3.6739	3.6740	3.6741	3.6742	3.6743	3.6744	3.6745	3.6746	3.6747	3.6748
	18	50	3.6749	3.6750	3.6750	3.6751	3.6752	3.6753	3.6754	3.6755	3.6756	3.6757
1	19	0	3.6758	3.6759	3.6760	3.6761	3.6761	3.6762	3.6763	3.6764	3.6765	3.6766
	19	10	3.6767	3.6768	3.6769	3.6770	3.6771	3.6772	3.6772	3.6773	3.6774	3.6775
	19	20	3.6776	3.6777	3.6778	3.6779	3.6780	3.6781	3.6782	3.6782	3.6783	3.6784
	19	30	3.6785	3.6786	3.6787	3.6788	3.6789	3.6790	3.6791	3.6792	3.6792	3.6793
	19	40	3.6794	3.6795	3.6796	3.6797	3.6798	3.6799	3.6800	3.6801	3.6802	3.6802
	19	50	3.6803	3.6804	3.6805	3.6806	3.6807	3.6808	3.6809	3.6810	3.6811	3.6812

TABLE VII.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
1h. 20m. 0s.	3.6812	3.6813	3.6814	3.6815	3.6816	3.6817	3.6818	3.6819	3.6820	3.6821
20 10	3.6821	3.6822	3.6823	3.6824	3.6825	3.6826	3.6827	3.6828	3.6829	3.6830
20 20	3.6830	3.6831	3.6832	3.6833	3.6834	3.6835	3.6836	3.6837	3.6838	3.6839
20 30	3.6839	3.6840	3.6841	3.6842	3.6843	3.6844	3.6845	3.6846	3.6847	3.6848
20 40	3.6848	3.6849	3.6850	3.6851	3.6852	3.6853	3.6854	3.6855	3.6856	3.6857
20 50	3.6857	3.6858	3.6859	3.6860	3.6861	3.6862	3.6863	3.6864	3.6865	3.6865
1 21 0	3.6866	3.6867	3.6868	3.6869	3.6870	3.6871	3.6872	3.6873	3.6874	3,6874
21 10	3.6875	3.6876	3.6877	3.6878	3.6879	3.6880	3.6881	3.6882	3.6882	3.6883
21 20	3.6884	3.6885	3.6886	3.6887	3.6888	3.6889	3.6890	3.6890	3.6891	3.6892
21 30	3.6893	3.6894	3.6895	3.6896	3.6897	3.6898	3.6898	3.6899	3.6900	3.6901
21 40	3.6902	3.6903	3.6904	3.6905	5.6906	3.6906	3.6907	3.6908	3.6909	3.6910
21 50	3.6911	3.6912	3.6913	3.6913	3.6914	3.6915	3.6916	3.6917	3.6918	3.6919
1 22 0	3.6920	3.6921	3.6921	3.6922	3.6923	3.6924	3.6925	3.6926	3.6927	3.6928
22 10	3.6928	3.6929	3.6930	3.6931	3.6932	3.6933	3.6934	3.6935	3.6936	3.6936
22 20	3.6937	3.6938	3.6939	3.6940	3.6941	3.6942	3.6943	3.6943	3.6944	3.6945
22 30	3.6946	3.6947	3.6948	3.6949	3.6950	3.6950	3.6951	3.6952	3.6953	3.6954
22 40	3.6955	3.6956	3.6957	3.6957	3.6958	3.6959	3.6960	3.6961	3.6962	3.6963
22 50	3.6964	3.6964	3.6965	3.6966	3,6967	3.6968	3.6969	3.6970	3.6971	3.6971
1 23 0	3.6972	3.6973	3.6974	3.6975	3.6976	3.6977	3.6978	3.6978	3.6979	3.6980
23 10	3.6981	3.6982	3.6983	3.6984	3.6984	3.6985	3.6986	3.6987	3.6988	3.6989
23 20	3.6990	3.6991	3.6991	3.6992	3.6993	3.6994	3.6995	3.6996	3.6997	3.6998
23 30	3.6998	3.6999	3.7000	3.7001	3.7002	3.7003	3.7004	3.7004	3.7005	3.7006
23 40	3.7007	3.7008	3.7009	3.7010	3.7010	3.7011	3.7012	3.7013	3.7014	3.7015
23 50	3.7016	3.7017	3.7017	3.7018	3.7019	3.7020	3.7021	3.7022	3.7023	3.7023
1 24 0	3.7024	3.7025	3.7026	3.7027	3.7028	3.7029	3.7029	3.7030	3.7031	3.7032
24 10	3.7033	3.7034	3.7035	3.7035	3.7036	3.7037	3.7038	3.7039	3.7040	3.7041
24 20	3.7042	3.7042	3.7043	3.7044	3.7045	3.7046	3.7047	3.7048	3.7048	3.7049
24 30	3.7050	3.7051	3.7052	3.7053	3.7054	3.7054	3.7055	3.7056	3.7057	3.7058
24 40	3.7059	3.7060	3.7060	3.7061	3.7062	3.7063	3.7064	3.7065	3.7065	3.7066
24 50	3.7067	3.7068	3.7069	3.7070	3.7071	3.7071	3.7072	3.7073	3.7074	3.7075
1 25 0	3.7076	3.7077	3.7077	3.7078	3.7079	3.7080	3.7081	3.7082	3.7083	3.7083
25 10	3.7084	3.7085	3.7086	3.7087	3.7088	3.7088	3.7089	3.7090	3.7091	3.7092
25 20	3.7093	3.7094	3.7094	3.7095	3.7096	3.7097	3.7098	3.7099	3.7099	3.7100
25 30	3.7101	3.7102	3.7103	3.7104	3.7105	3.7105	3.7106	3.7107	3.7108	3.7109
25 40	3.7110	3.7110	3.7111	3.7112	3.7113	3.7114	3.7115	3.7116	3.7116	3.7117
25 50	3.7118	3.7119	3.7120	3.7121	3.7121	3.7122	3.7123	3.7124	3.7125	3.7126
1 26 0	3.7126	3.7127	3.7128	3.7129	3.7130	3.7131	3.7132	3.7132	3.7133	3.7134
26 10	3.7135	3.7136	3.7137	3.7137	3.7138	3.7139	3.7140	3.7141	3.7142	3.7142
26 20	3.7143	3.7144	3.7145	3.7146	3.7147	3.7147	3.7148	3.7149	3.7150	3.7151
26 30	3.7152	3.7153	3.7153	3.7154	3.7155	3.7156	3.7157	3.7158	3.7158	3.7159
26 40	3.7160	3.7161	3.7162	3.7163	3.7163	3.7164	3.7165	3.7166	3.7167	3.7168
26 50	3.7168	3.7169	3.7170	3.7171	3.7172	3.7173	3.7173	3.7174	3.7175	3.7176
1 27 0	3.7177	3.7178	3.7178	3.7179	3.7180	3.7181	3.7182	3.7183	3.7183	3.7184
27 10	3.7185	3.7186	3.7187	3.7188	3.7188	3.7189	3.7190	3.7191	3.7192	3.7192
27 20	3.7193	3.7194	3.7195	3.7196	3.7197	3.7197	3.7198	3.7199	3.7200	3.7201
27 30	3.7202	3.7202	3.7203	3.7204	3.7205	3.7206	3.7207	3.7207	3.7208	3.7209
27 40	3.7210	3.7211	3.7212	3.7212	3.7213	3.7214	3.7215	3.7216	3.7216	3.7217
27 50	3.7218	3.7219	3.7220	3.7221	3.7221	3.7222	3.7223	3.7224	3.7225	3.7226
1 28 0	3.7226	3.7227	3.7228	3.7229	3.7230	3.7230	3.7231	3.7232	3.7233	3.7234
28 10	3.7235	3.7235	3.7236	3.7237	3.7238	3.7239	3.7239	3.7240	3.7241	3.7242
28 20	3.7243	3.7244	3.7244	3.7245	3.7246	3.7247	3.7248	3.7248	3.7249	3.7250
28 30	3.7251	3.7252	3.7253	3.7253	3.7254	3.7255	3.7256	3.7257	3.7257	3.7258
28 40	3.7259	3.7260	3.7261	3.7262	3.7262	3.7263	3.7264	3.7265	3.7266	3.7266
28 50	3.7267	3.7268	3.7269	3.7270	3.7271	3.7271	3.7272	3.7273	3.7274	3.7275
1 29 0	3.7275	3.7276	3.7277	3.7278	3.7279	3.7279	3.7280	3.7281	3.7282	3.7283
29 10	3.7284	3.7284	3.7285	3.7286	3.7287	3.7288	3.7288	3.7289	3.7290	3.7291
29 20	3.7292	3.7292	3.7293	3.7294	3.7295	3.7296	3.7297	3.7297	3.7298	3.7299
29 30	3.7300	3.7301	3.7301	3.7302	3.7303	3.7304	3.7305	3.7305	3.7306	3.7307
29 40	3.7308	3.7309	3.7309	3.7310	3.7311	3.7312	3.7313	3.7313	3.7314	3.7315
29 50	3.7316	3.7317	3.7317	3.7318	3.7319	3.7320	3.7321	3.7322	3.7322	3.7323

TABLE VII.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
1° h.	30′ m.	0″ s.	3.7324	3.7325	3.7326	3.7326	3.7327	3.7328	3.7329	3.7330	3.7330	3.7331
	30	10	3.7332	3.7333	3.7334	3.7334	3.7335	3.7336	3.7337	3.7338	3.7338	3.7339
	30	20	3.7340	3.7341	3.7342	3.7342	3.7343	3.7344	3.7345	3.7346	3.7346	3.7347
	30	30	3.7348	3.7349	3.7350	3.7350	3.7351	3.7352	3.7353	3.7354	3.7354	3.7355
	30	40	3.7356	3.7357	3.7358	3.7358	3.7359	3.7360	3.7361	3.7362	3.7362	3.7363
	30	50	3.7364	3.7365	3.7366	3.7366	3.7367	3.7368	3.7369	3.7370	3.7370	3.7371
1	31	0	3.7372	3.7373	3.7374	3.7374	3.7375	3.7376	3.7377	3.7377	3.7378	3.7379
	31	10	3.7380	3.7381	3.7381	3.7382	3.7383	3.7384	3.7385	3.7385	3.7386	3.7387
	31	20	3.7388	3.7389	3.7389	3.7390	3.7391	3.7392	3.7393	3.7393	3.7394	3.7395
	31	30	3.7396	3.7397	3.7397	3.7398	3.7399	3.7400	3.7400	3.7401	3.7402	3.7403
	31	40	3.7404	3.7404	3.7405	3.7406	3.7407	3.7408	3.7408	3.7409	3.7410	3.7411
	31	50	3.7412	3.7412	3.7413	3.7414	3.7415	3.7415	3.7416	3.7417	3.7418	3.7419
1	32	0	3.7419	3.7420	3.7421	3.7422	3.7423	3.7423	3.7424	3.7425	3.7426	3.7426
	32	10	3.7427	3.7428	3.7429	3.7430	3.7430	3.7431	3.7432	3.7433	3.7434	3.7434
	32	20	3.7435	3.7436	3.7437	3.7437	3.7438	3.7439	3.7440	3.7441	3.7441	3.7442
	32	30	3.7443	3.7444	3.7444	3.7445	3.7446	3.7447	3.7448	3.7448	3.7449	3.7450
	32	40	3.7451	3.7452	3.7452	3.7453	3.7454	3.7455	3.7455	3.7456	3.7457	3.7458
	32	50	3.7459	3.7459	3.7460	3.7461	3.7462	3.7462	3.7463	3.7464	3.7465	3.7466
1	33	0	3.7466	3.7467	3.7468	3.7469	3.7469	3.7470	3.7471	3.7472	3.7473	3.7473
	33	10	3.7474	3.7475	3.7476	3.7476	3.7477	3.7478	3.7479	3.7480	3.7480	3.7481
	33	20	3.7482	3.7483	3.7483	3.7484	3.7485	3.7486	3.7487	3.7487	3.7488	3.7489
	33	30	3.7490	3.7490	3.7491	3.7492	3.7493	3.7493	3.7494	3.7495	3.7496	3.7497
	33	40	3.7497	3.7498	3.7499	3.7500	3.7500	3.7501	3.7502	3.7503	3.7504	3.7504
	33	50	3.7505	3.7506	3.7507	3.7507	3.7508	3.7509	3.7510	3.7510	3.7511	3.7512
1	34	0	3.7513	3.7514	3.7514	3.7515	3.7516	3.7517	3.7517	3.7518	3.7519	3.7520
	34	10	3.7520	3.7521	3.7522	3.7523	3.7524	3.7524	3.7525	3.7526	3.7527	3.7527
	34	20	3.7528	3.7529	3.7530	3.7530	3.7531	3.7532	3.7533	3.7534	3.7534	3.7535
	34	30	3.7536	3.7537	3.7537	3.7538	3.7539	3.7540	3.7540	3.7541	3.7542	3.7543
	34	40	3.7543	3.7544	3.7545	3.7546	3.7547	3.7547	3.7548	3.7549	3.7550	3.7550
	34	50	3.7551	3.7552	3.7553	3.7553	3.7554	3.7555	3.7556	3.7556	3.7557	3.7558
1	35	0	3.7559	3.7560	3.7560	3.7561	3.7562	3.7563	3.7563	3.7564	3.7565	3.7566
	35	10	3.7566	3.7567	3.7568	3.7569	3.7569	3.7570	3.7571	3.7572	3.7572	3.7573
	35	20	3.7574	3.7575	3.7575	3.7576	3.7577	3.7578	3.7579	3.7579	3.7580	3.7581
	35	30	3.7582	3.7582	3.7583	3.7584	3.7585	3.7585	3.7586	3.7587	3.7588	3.7588
	35	40	3.7589	3.7590	3.7591	3.7591	3.7592	3.7593	3.7594	3.7594	3.7595	3.7596
	35	50	3.7597	3.7597	3.7598	3.7599	3.7600	3.7600	3.7601	3.7602	3.7603	3.7603
1	36	0	3.7604	3.7605	3.7606	3.7606	3.7607	3.7608	3.7609	3.7609	3.7610	3.7611
	36	10	3.7612	3.7613	3.7613	3.7614	3.7615	3.7616	3.7616	3.7617	3.7618	3.7619
	36	20	3.7619	3.7620	3.7621	3.7622	3.7622	3.7623	3.7624	3.7625	3.7625	3.7626
	36	30	3.7627	3.7628	3.7628	3.7629	3.7630	3.7631	3.7631	3.7632	3.7633	3.7634
	36	40	3.7634	3.7635	3.7636	3.7637	3.7637	3.7638	3.7639	3.7640	3.7640	3.7641
	36	50	3.7642	3.7643	3.7643	3.7644	3.7645	3.7645	3.7646	3.7647	3.7648	3.7648
1	37	0	3.7649	3.7650	3.7651	3.7651	3.7652	3.7653	3.7654	3.7654	3.7655	3.7656
	37	10	3.7657	3.7657	3.7658	3.7659	3.7660	3.7660	3.7661	3.7662	3.7663	3.7663
	37	20	3.7664	3.7665	3.7666	3.7666	3.7667	3.7668	3.7669	3.7669	3.7670	3.7671
	37	30	3.7672	3.7672	3.7673	3.7674	3.7675	3.7675	3.7676	3.7677	3.7677	3.7678
	37	40	3.7679	3.7680	3.7680	3.7681	3.7682	3.7683	3.7683	3.7684	3.7685	3.7686
	37	50	3.7686	3.7687	3.7688	3.7689	3.7689	3.7690	3.7691	3.7692	3.7692	3.7693
1	38	0	3.7694	3.7695	3.7695	3.7696	3.7697	3.7697	3.7698	3.7699	3.7700	3.7700
	38	10	3.7701	3.7702	3.7703	3.7703	3.7704	3.7705	3.7706	3.7706	3.7707	3.7708
	38	20	3.7709	3.7709	3.7710	3.7711	3.7711	3.7712	3.7713	3.7714	3.7714	3.7715
	38	30	3.7716	3.7717	3.7717	3.7718	3.7719	3.7720	3.7720	3.7721	3.7722	3.7722
	38	40	3.7723	3.7724	3.7725	3.7725	3.7726	3.7727	3.7728	3.7728	3.7729	3.7730
	38	50	3.7731	3.7731	3.7732	3.7733	3.7733	3.7734	3.7735	3.7736	3.7736	3.7737
1	39	0	3.7738	3.7739	3.7739	3.7740	3.7741	3.7742	3.7742	3.7743	3.7744	3.7744
	39	10	3.7745	3.7746	3.7747	3.7747	3.7748	3.7749	3.7750	3.7750	3.7751	3.7752
	39	20	3.7752	3.7753	3.7754	3.7755	3.7755	3.7756	3.7757	3.7758	3.7758	3.7759
	39	30	3.7760	3.7760	3.7761	3.7762	3.7763	3.7763	3.7764	3.7765	3.7766	3.7766
	39	40	3.7767	3.7768	3.7768	3.7769	3.7770	3.7771	3.7771	3.7772	3.7773	3.7774
	39	50	3.7774	3.7775	3.7776	3.7776	3.7777	3.7778	3.7779	3.7779	3.7780	3.7781

TABLE VII.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
°	′	″										
1h.	40m.	0s.	3.7782	3.7782	3.7783	3.7784	3.7784	3.7785	3.7786	3.7787	3.7787	3.7788
	40	10	3.7789	3.7789	3.7790	3.7791	3.7792	3.7792	3.7793	3.7794	3.7795	3.7795
	40	20	3.7796	3.7797	3.7797	3.7798	3.7799	3.7800	3.7800	3.7801	3.7802	3.7802
	40	30	3.7803	3.7804	3.7805	3.7805	3.7806	3.7807	3.7807	3.7808	3.7809	3.7810
	40	40	3.7810	3.7811	3.7812	3.7813	3.7813	3.7814	3.7815	3.7815	3.7816	3.7817
	40	50	3.7818	3.7818	3.7819	3.7820	3.7820	3.7821	3.7822	3.7823	3.7823	3.7824
1	41	0	3.7825	3.7825	3.7826	3.7827	3.7828	3.7828	3.7829	3.7830	3.7830	3.7831
	41	10	3.7832	3.7833	3.7833	3.7834	3.7835	3.7835	3.7836	3.7837	3.7838	3.7838
	41	20	3.7839	3.7840	3.7840	3.7841	3.7842	3.7843	3.7843	3.7844	3.7845	3.7845
	41	30	3.7846	3.7847	3.7848	3.7848	3.7849	3.7850	3.7850	3.7851	3.7852	3.7853
	41	40	3.7853	3.7854	3.7855	3.7855	3.7856	3.7857	3.7858	3.7858	3.7859	3.7860
	41	50	3.7860	3.7861	3.7862	3.7863	3.7863	3.7864	3.7865	3.7865	3.7866	3.7867
1	42	0	3.7868	3.7868	3.7869	3.7870	3·7870	3.7871	3.7872	3.7872	3.7873	3.7874
	42	10	3.7875	3.7875	3.7876	3.7877	3.7877	3.7878	3.7879	3.7880	3.7880	3.7881
	42	20	3.7882	3.7882	3.7883	3.7884	3.7885	3.7885	3.7886	3.7887	3.7887	3.7888
	42	30	3.7889	3.7889	3.7890	3.7891	3.7892	3.7892	3.7893	3.7894	3.7894	3.7895
	42	40	3.7896	3.7897	3.7897	3.7898	3.7899	3.7899	3.7900	3.7901	3.7901	3.7902
	42	50	3.7903	3.7904	3.7904	3.7905	3.7906	3.7906	3.7907	3.7908	3.7908	3.7909
1	43	0	3.7910	3.7911	3.7911	3.7912	3.7913	3.7913	3.7914	3.7915	3.7916	3.7916
	43	10	3.7917	3.7918	3.7918	3.7919	3.7920	3.7920	3.7921	3.7922	3.7923	3.7923
	43	20	3.7924	3.7925	3.7925	3.7926	3.7927	3.7927	3.7928	3.7929	3.7930	3.7930
	43	30	3.7931	3.7932	3.7932	3.7933	3.7934	3.7934	3.7935	3.7936	3.7937	3.7937
	43	40	3.7938	3.7939	3.7939	3.7940	3.7941	3.7941	3.7942	3.7943	3.7943	3.7944
	43	50	3.7945	3.7946	3.7946	3.7947	3.7948	3.7948	3.7949	3.7950	3.7950	3.7951
1	44	0	3.7952	3.7953	3.7953	3.7954	3.7955	3.7955	3.7956	3.7957	3.7957	3.7958
	44	10	3.7959	3.7959	3.7960	3.7961	3.7962	3.7962	3.7963	3.7964	3.7964	3.7965
	44	20	3.7966	3.7966	3.7967	3.7968	3.7969	3.7969	3.7970	3.7971	3.7971	3.7972
	44	30	3.7973	3.7973	3.7974	3.7975	3.7975	3.7976	3.7977	3.7978	3.7978	3.7979
	44	40	3.7980	3.7980	3.7981	3.7982	3.7982	3.7983	3.7984	3.7984	3.7985	3.7986
	44	50	3.7987	3.7987	3.7988	3.7989	3.7989	3.7990	3.7991	3.7991	3.7992	3.7993
1	45	0	3.7993	3.7994	3.7995	3.7995	3.7996	3.7997	3.7998	3.7998	3.7999	3.8000
	45	10	3.8000	3.8001	3.8002	3.8002	3.8003	3.8004	3.8004	3.8005	3.8006	3.8006
	45	20	3.8007	3.8008	3.8009	3.8009	3.8010	3.8011	3.8011	3.8012	3.8013	3.8013
	45	30	3.8014	3.8015	3.8015	3.8016	3.8017	3.8017	3.8018	3.8019	3.8020	3.8020
	45	40	3.8021	3.8022	3.8022	3.8023	3.8024	3.8024	3.8025	3.8026	3.8026	3.8027
	45	50	3.8028	3.8028	3.8029	3.8030	3.8030	3.8031	3.8032	3.8033	3.8033	3.8034
1	46	0	3.8035	3.8035	3.8036	3.8037	3.8037	3.8038	3.8039	3.8039	3.8040	3.8041
	46	10	3.8041	3.8042	3.8043	3.8043	3.8044	3.8045	3.8045	3.8046	3.8047	3.8048
	46	20	3.8048	3.8049	3.8050	3.8050	3.8051	3.8052	3.8052	3.8053	3.8054	3.8054
	46	30	3.8055	3.8056	3.8056	3.8057	3.8058	3.8058	3.8059	3.8060	3.8060	3.8061
	46	40	3.8062	3.8062	3.8063	3.8064	3.8065	3.8065	3.8066	3.8067	3.8067	3.8068
	46	50	3.8069	3.8069	3.8070	3.8071	3.8071	3.8072	3.8073	3.8073	3.8074	3.8075
1	47	0	3.8075	3.8076	3.8077	3.8077	3.8078	3.8079	3.8079	3.8080	3.8081	3.8081
	47	10	3.8082	3.8083	3.8083	3.8084	3.8085	3.8085	3.8086	3.8087	3.8088	3.8088
	47	20	3.8089	3.8090	3.8090	3.8091	3.8092	3.8092	3.8093	3.8094	3.8094	3.8095
	47	30	3.8096	3.8096	3.8097	3.8098	3.8098	3.8099	3.8100	3.8100	3.8101	3.8102
	47	40	3.8102	3.8103	3.8104	3.8104	3.8105	3.8106	3.8106	3.8107	3.8108	3.8108
	47	50	3.8109	3.8110	3.8110	3.8111	3.8112	3.8112	3.8113	3.8114	3.8114	3.8115
1	48	0	3.8116	3.8116	3.8117	3.8118	3.8118	3.8119	3.8120	3.8120	3.8121	3.8122
	48	10	3.8122	3.8123	3.8124	3.8124	3.8125	3.8126	3.8126	3.8127	3.8128	3.8128
	48	20	3.8129	3.8130	3.8130	3.8131	3.8132	3.8132	3.8133	3.8134	3.8134	3.8135
	48	30	3.8136	3.8136	3.8137	3.8138	3.8138	3.8139	3.8140	3.8140	3.8141	3.8142
	48	40	3.8142	3.8143	3.8144	3.8144	3.8145	3.8146	3.8146	3.8147	3.8148	3.8148
	48	50	3.8149	3.8150	3.8150	3.8151	3.8152	3.8152	3.8153	3.8154	3.8154	3.8155
1	49	0	3.8156	3.8156	3.8157	3.8158	3.8158	3.8159	3.8160	3.8160	3.8161	3.8162
	49	10	3.8162	3.8163	3.8164	3.8164	3.8165	3.8166	3.8166	3.8167	3.8168	3.8168
	49	20	3.8169	3.8170	3.8170	3.8171	3.8172	3.8172	3.8173	3.8174	3.8174	3.8175
	49	30	3.8176	3.8176	3.8177	3.8178	3.8178	3.8179	3.8180	3.8180	3.8181	3.8182
	49	40	3.8182	3.8183	3.8184	3.8184	3.8185	3.8186	3.8186	3.8187	3.8188	3.8188
	49	50	3.8189	3.8190	3.8190	3.8191	3.8191	3.8192	3.8193	3.8193	3.8194	3.8195

TABLE VII.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
1h. 50m. 0s.	3.8195	3.8196	3.8197	3.8197	3.8198	3.8199	3.8199	3.8200	3.8201	3.8201
50 10	3.8202	3.8203	3.8203	3.8204	3.8205	3.8205	3.8206	3.8207	3.8207	3.8208
50 20	3.8209	3.8209	3.8210	3.8211	3.8211	3.8212	3.8213	3.8213	3.8214	3.8214
50 30	3.8215	3.8216	3.8216	3.8217	3.8218	3.8218	3.8219	3.8220	3.8220	3.8221
50 40	3.8222	3.8222	3.8223	3.8224	3.8224	3.8225	3.8226	3.8226	3.8227	3.8228
50 50	3.8228	3.8229	3.8230	3.8230	3.8231	3.8231	3.8232	3.8233	3.8233	3.8234
1 51 0	3.8235	3.8235	3.8236	3.8237	3.8237	3.8238	3.8239	3.8239	3.8240	3.8241
51 10	3.8241	3.8242	3.8243	3.8243	3.8244	3.8245	3.8245	3.8246	3.8246	3.8247
51 20	3.8248	3.8248	3.8249	3.8250	3.8250	3.8251	3.8252	3.8252	3.8253	3.8254
51 30	3.8254	3.8255	3.8256	3.8256	3.8257	3.8258	3.8258	3.8259	3.8259	3.8260
51 40	3.8261	3.8261	3.8262	3.8263	3.8263	3.8264	3.8265	3.8265	3.8266	3.8267
51 50	3.8267	3.8268	3.8269	3.8269	3.8270	3.8270	3.8271	3.8272	3.8272	3.8273
1 52 0	3.8274	3.8274	3.8275	3.8276	3.8276	3.8277	3.8278	3.8278	3.8279	2.8280
52 10	3.8280	3.8281	3.8281	3.8282	3.8283	3.8283	3.8284	3.8285	3.8285	3.8286
52 20	3.8287	3.8287	3.8288	3.8289	3.8289	3.8290	3.8290	3.8291	3.8292	3.8292
52 30	3.8293	3.8294	3.8294	3.8295	3.8296	3.8296	3.8297	3.8298	3.8298	3.8299
52 40	3.8299	3.8300	3.8301	3.8301	3.8302	3.8303	3.8303	3.8304	3.8305	3.8305
52 50	3.8306	3.8307	3.8307	3.8308	3.8308	3.8309	3.8310	3.8310	3.8311	3.8312
1 53 0	3.8312	3.8313	3.8314	3.8314	3.8315	3.8315	3.8316	3.8317	3.8317	3.8318
53 10	3.8319	3.8319	3.8320	3.8321	3.8321	3.8322	3.8323	3.8323	3.8324	3.8324
53 20	3.8325	3.8326	3.8326	3.8327	3.8328	3.8328	3.8329	3.8330	3.8330	3.8331
53 30	3.8331	3.8332	3.8333	3.8333	3.8334	3.8335	3.8355	3.8336	3.8337	3.8337
53 40	3.8338	3.8338	3.8339	3.8340	3.8340	3.8341	3.8342	3.8342	3.8343	3.8344
53 50	3.8344	3.8345	3.8345	3.8346	3.8347	3.8347	3.8348	3.8349	3.8349	3.8350
1 54 0	3.8351	3.8351	3.8352	3.8352	3.8353	3.8354	3.8354	3.8355	3.8356	3.8356
54 10	3.8357	3.8358	3.8358	3.8359	3.8359	3.8360	3.8361	3.8361	3.8362	3.8363
54 20	3.8363	3.8364	3.8365	3.8365	3.8366	3.8366	3.8367	3.8368	3.8368	3.8369
54 30	3.8370	3.8370	3.8371	3.8371	3.8372	3.8373	3.8373	3.8374	3.8375	3.8375
54 40	3.8376	3.8377	3.8377	3.8378	3.8378	3.8379	3.8380	3.8380	3.8381	3.8382
54 50	3.8382	3.8383	3.8383	3.8384	3.8385	3.8385	3.8386	3.8387	3.8387	3.8388
1 55 0	3.8388	3.8389	3.8390	3.8390	3.8391	3.8392	3.8392	3.8393	3.8394	3.8394
55 10	3.8395	3.8395	3.8396	3.8397	3.8397	3.8398	3.8399	3.8399	3.8400	3.8400
55 20	3.8401	3.8402	3.8402	3.8403	3.8404	3.8404	3.8405	3.8405	3.8406	3.8407
55 30	3.8407	3.8408	3.8409	3.8409	3.8410	3.8410	3.8411	3.8412	3.8412	3.8413
55 40	3.8414	3.8414	3.8415	3.8415	3.8416	3.8417	3.8417	3.8418	3.8419	3.8419
55 50	3.8420	3.8420	3.8421	3.8422	3.8422	3.8423	3.8424	3.8424	3.8425	3.8425
1 56 0	3.8426	3.8427	3.8427	3.8428	3.8429	3.8429	3.8430	3.8430	3.8431	3.8432
56 10	3.8432	3.8433	3.8434	3.8434	3.8435	3.8435	3.8436	3.8437	3.8437	3.8438
56 20	3.8439	3.8439	3.8440	3.8440	3.8441	3.8442	3.8442	3.8443	3.8444	3.8444
56 30	3.8445	3.8445	3.8446	3.8447	3.8447	3.8448	3.8448	3.8449	3.8450	3.8450
56 40	3.8451	3.8452	3.8452	3.8453	3.8453	3.8454	3.8455	3.8455	3.8456	3.8457
56 50	3.8457	3.8458	3.8458	3.8459	3.8460	3.8460	3.8461	3.8462	3.8462	3.8463
1 57 0	3.8463	3.8464	3.8465	3.8465	3.8466	3.8466	3.8467	3.8468	3.8468	3.8469
57 10	3.8470	3.8470	3.8471	3.8471	3.8472	3.8473	3.8473	3.8474	3.8474	3.8475
57 20	3.8476	3.8476	3.8477	3.8478	3.8478	3.8479	3.8479	3.8480	3.8481	3.8481
57 30	3.8482	3.8483	3.8483	3.8484	3.8484	3.8485	3.8486	3.8486	3.8487	3.8487
57 40	3.8488	3.8489	3.8489	3.8490	3.8491	3.8491	3.8492	3.8492	3.8493	3.8494
57 50	3.8494	3.8495	3.8495	3.8496	3.8497	3.8497	3.8498	3.8498	3.8499	3.8500
1 58 0	3.8500	3.8501	3.8502	3.8502	3.8503	3.8503	3.8504	3.8505	3.8505	3.8506
58 10	3.8506	3.8507	3.8508	3.8508	3.8509	3.8510	3.8510	3.8511	3.8511	3.8512
58 20	3.8513	3.8513	3.8514	3.8514	3.8515	3.8516	3.8516	3.8517	3.8517	3.8518
58 30	3.8519	3.8519	3.8520	3.8521	3.8521	3.8522	3.8522	3.8523	3.8524	3.8524
58 40	3.8525	3.8525	3.8526	3.8527	3.8527	3.8528	3.8528	3.8529	3.8530	3.8530
58 50	3.8531	3.8532	3.8532	3.8533	3.8533	3.8534	3.8535	3.8535	3.8536	3.8536
1 59 0	3.8537	3.8538	3.8538	3.8539	3.8539	3.8540	3.8541	3.8541	3.8542	3.8542
59 10	3.8543	3.8544	3.8544	3.8545	3.8545	3.8546	3.8547	3.8547	3.8548	3.8549
59 20	3.8549	3.8550	3.8550	3.8551	3.8552	3.8552	3.8553	3.8553	3.8554	3.8555
59 30	3.8555	3.8556	3.8556	3.8557	3.8558	3.8558	3.8559	3.8559	3.8560	3.8561
59 40	3.8561	3.8562	3.8562	3.8563	3.8564	3.8564	3.8565	3.8565	3.8566	3.8567
59 50	3.8567	3.8568	3.8568	3.8569	3.8570	3.8570	3.8571	3.8572	3.8572	3.8573

TABLE VII.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
2h.	0m.	0s.	3.8573	3.8574	3.8575	3.8575	3.8576	3.8576	3.8577	3.8578	3.8578	3.8579
	0	10	3.8579	3.8580	3.8581	3.8581	3.8582	3.8582	3.8583	3.8584	3.8584	3.8585
	0	20	3.8585	3.8586	3.8587	3.8587	3.8588	3.8588	3.8589	3.8590	3.8590	3.8591
	0	30	3.8591	3.8592	3.8593	3.8593	3.8594	3.8594	3.8595	3.8596	3.8596	3.8597
	0	40	3.8597	3.8598	3.8599	3.8599	3.8600	3.8600	3.8601	3.8602	3.8602	3.8603
	0	50	3.8603	3.8604	3.8605	3.8605	3.8606	3.8606	3.8607	3.8608	3.8608	3.8609
2	1	0	3.8609	3.8610	3.8611	3.8611	3.8612	3.8612	3.8613	3.8614	3.8614	3.8615
	1	10	3.8615	3.8616	3.8617	3.8617	3.8618	3.8618	3.8619	3.8620	3.8620	3.8621
	1	20	3.8621	3.8622	3.8623	3.8623	3.8624	3.8624	3.8625	3.8625	3.8626	3.8627
	1	30	3.8627	3.8628	3.8628	3.8629	3.8630	3.8630	3.8631	3.8631	3.8632	3.8633
	1	40	3.8633	3.8634	3.8634	3.8635	3.8636	3.8636	3.8637	3.8637	3.8638	3.8639
	1	50	3.8639	3.8640	3.8640	3.8641	3.8642	3.8642	3.8643	3.8643	3.8644	3.8645
2	2	0	3.8645	3.8646	3.8646	3.8647	3.8647	3.8648	3.8649	3.8649	3.8650	3.8650
	2	10	3.8651	3.8652	3.8652	3.8653	3.8653	3.8654	3.8655	3.8655	3.8656	3.8656
	2	20	3.8657	3.8658	3.8658	3.8659	3.8659	3.8660	3.8661	3.8661	3.8662	3.8662
	2	30	3.8663	3.8663	3.8664	3.8665	3.8665	3.8666	3.8666	3.8667	3.8668	3.8668
	2	40	3.8669	3.8669	3.8670	3.8671	3.8671	3.8672	3.8672	3.8673	3.8673	3.8674
	2	50	3.8675	3.8675	3.8676	3.8676	3.8677	3.8678	3.8678	3.8679	3.8679	3.8680
2	3	0	3.8681	3.8681	3.8682	3.8682	3.8683	3.8684	3.8684	3.8685	3.8685	3.8686
	3	10	3.8686	3.8687	3.8688	3.8688	3.8689	3.8689	3.8690	3.8691	3.8691	3.8692
	3	20	3.8692	3.8693	3.8693	3.8694	3.8695	3.8695	3.8696	3.8696	3.8697	3.8698
	3	30	3.8698	3.8699	3.8699	3.8700	3.8701	3.8701	3.8702	3.8702	3.8703	3.8703
	3	40	3.8704	3.8765	3.8705	3.8706	3.8706	3.8707	3.8708	3.8708	3.8709	3.8709
	3	50	3.8710	3.8710	3.8711	3.8712	3.8712	3.8713	3.8713	3.8714	3.8715	3.8715
2	4	0	3.8716	3.8716	3.8717	3.8717	3.8718	3.8719	3.8719	3.8720	3.8720	3.8721
	4	10	3.8722	3.8722	3.8723	3.8723	3.8724	3.8724	3.8725	3.8726	3.8726	3.8727
	4	20	3.8727	3.8728	3.8729	3.8729	3.8730	3.8730	3.8731	3.8731	3.8732	3.8733
	4	30	3.8733	3.8734	3.8734	3.8735	3.8736	3.8736	3.8737	3.8737	3.8738	3.8738
	4	40	3.8739	3.8740	3.8740	3.8741	3.8741	3.8742	3.8742	3.8743	3.8744	3.8744
	4	50	3.8745	3.8745	3.8746	3.8747	3.8747	3.8748	3.8748	3.8749	3.8749	3.8750
2	5	0	3.8751	3.8751	3.8752	3.8752	3.8753	3.8754	3.8754	3.8755	3.8755	3.8756
	5	10	3.8756	3.8757	3.8758	3.8758	3.8759	3.8759	3.8760	3.8760	3.8761	3.8762
	5	20	3.8762	3.8763	3.8763	3.8764	3.8764	3.8765	3.8766	3.8766	3.8767	3.8767
	5	30	3.8768	3.8769	3.8769	3.8770	3.8770	3.8771	3.8771	3.8772	3.8773	3.8773
	5	40	3.8774	3.8774	3.8775	3.8775	3.8776	3.8777	3.8777	3.8778	3.8778	3.8779
	5	50	3.8779	3.8780	3.8781	3.8781	3.8782	3.8782	3.8783	3.8783	3.8784	3.8785
2	6	0	3.8785	3.8786	3.8786	3.8787	3.8788	3.8788	3.8789	3.8789	3.8790	3.8790
	6	10	3.8791	3.8792	3.8792	3.8793	3.8793	3.8794	3.8794	3.8795	3.8796	3.8796
	6	20	3.8797	3.8797	3.8798	3.8798	3.8799	3.8800	3.8800	3.8801	3.8801	3.8802
	6	30	3.8802	3.8803	3.8804	3.8804	3.8805	3.8805	3.8806	3.8806	3.8807	3.8808
	6	40	3.8808	3.8809	3.8809	3.8810	3.8810	3.8811	3.8812	3.8812	3.8813	3.8813
	6	50	3.8814	3.8814	3.8815	3.8816	3.8816	3.8817	3.8817	3.8818	3.8818	3.8819
2	7	0	3.8820	3.8820	3.8821	3.8821	3.8822	3.8822	3.8823	3.8824	3.8824	3.8825
	7	10	3.8825	3.8826	3.8826	3.8827	3.8828	3.8828	3.8829	3.8829	3.8830	3.8830
	7	20	3.8831	3.8832	3.8832	3.8833	3.8833	3.8834	3.8834	3.8835	3.8835	3.8836
	7	30	3.8837	3.8837	3.8838	3.8838	3.8839	3.8839	3.8840	3.8841	3.8841	3.8842
	7	40	3.8842	3.8843	3.8843	3.8844	3.8845	3.8845	3.8846	3.8846	3.8847	3.8847
	7	50	3.8848	3.8849	3.8849	3.8850	3.8850	3.8851	3.8851	3.8852	3.8852	3.8853
2	8	0	3.8854	3.8854	3.8855	3.8855	3.8856	3.8856	3.8857	3.8858	3.8858	3.8859
	8	10	3.8859	3.8860	3.8860	3.8861	3.8862	3.8862	3.8863	3.8863	3.8864	3.8864
	8	20	3.8865	3.8865	3.8866	3.8867	3.8867	3.8868	3.8868	3.8869	3.8869	3.8870
	8	30	3.8871	3.8871	3.8872	3.8872	3.8873	3.8873	3.8874	3.8874	3.8875	3.8876
	8	40	3.8876	3.8877	3.8877	3.8878	3.8878	3.8879	3.8880	3.8880	3.8881	3.8881
	8	50	3.8882	3.8882	3.8883	3.8883	3.8884	3.8885	3.8885	3.8886	3.8886	3.8887
2	9	0	3.8887	3.8888	3.8889	3.8889	3.8890	3.8890	3.8891	3.8891	3.8892	3.8892
	9	10	3.8893	3.8894	3.8894	3.8895	3.8895	3.8896	3.8896	3.8897	3.8897	3.8898
	9	20	3.8899	3.8899	3.8900	3.8900	3.8901	3.8901	3.8902	3.8903	3.8903	3.8904
	9	30	3.8904	3.8905	3.8905	3.8906	3.8906	3.8907	3.8908	3.8908	3.8909	3.8909
	9	40	3.8910	3.8910	3.8911	3.8911	3.8912	3.8913	3.8913	3.8914	3.8914	3.8915
	9	50	3.8915	3.8916	3.8916	3.8917	3.8918	3.8918	3.8919	3.8919	3.8920	3.8920

TABLE VII.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
2h. 10m. 0s.	3.8921	3.8922	3.8922	3.8923	3.8923	3.8924	3.8924	3.8925	3.8925	3.8926
10 10	3.8927	3.8927	3.8928	3.8928	3.8929	3.8929	3.8930	3.8930	3.8931	3.8932
10 20	3.8932	3.8933	3.8933	3.8934	3.8934	3.8935	3.8935	3.8936	3.8937	3.8937
10 30	3.8938	3.8938	3.8939	3.8939	3.8940	3.8940	3.8941	3.8941	3.8942	3.8943
10 40	3.8943	3.8944	3.8944	3.8945	3.8945	3.8946	3.8946	3.8947	3.8948	3.8948
10 50	3.8949	3.8949	3.8950	3.8950	3.8951	3.8951	3.8952	3.8953	3.8953	3.8954
2 11 0	3.8954	3.8955	3.8955	3.8956	3.8956	3.8957	3.8958	3.8958	3.8959	3.8959
11 10	3.8960	3.8960	3.8961	3.8961	3.8962	3.8963	3.8963	3.8964	3.8964	3.8965
11 20	3.8965	3.8966	3.8966	3.8967	3.8967	3.8968	3.8969	3.8969	3.8970	3.8970
11 30	3.8971	3.8971	3.8972	3.8972	3.8973	3.8974	3.8974	3.8975	3.8975	3.8976
11 40	3.8976	3.8977	3.8977	3.8978	3.8978	3.8979	3.8980	3.8980	3.8981	3.8981
11 50	3.8982	3.8982	3.8983	3.8983	3.8984	3.8985	3.8985	3.8986	3.8986	3.8987
2 12 0	3.8937	3.8988	3.8988	3.8989	3.8989	3.8990	3.8991	3.8991	3.8992	3.8992
12 10	3.8993	3.8993	3.8994	3.8994	3.8995	3.8995	3.8996	3.8997	3.8997	3.8998
12 20	3.8998	3.8999	3.8999	3.9000	3.9000	3.9001	3.9001	3.9002	3.9003	3.9003
12 30	3.9004	3.9004	3.9005	3.9005	3.9006	3.9006	3.9007	3.9007	3.9008	3.9009
12 40	3.9009	3.9010	3.9010	3.9011	3.9011	3.9012	3.9012	3.9013	3.9013	3.9014
12 50	3.9015	3.9015	3.9016	3.9016	3.9017	3.9017	3.9018	3.9018	3.9019	3.9019
2 13 0	3.9020	3.9021	3.9021	3.9022	3.9022	3.9023	3.9023	3.9024	3.9024	3.9025
13 10	3.9025	3.9026	3.9027	3.9027	3.9028	3.9028	3.9029	3.9029	3.9030	3.9030
13 20	3.9031	3.9031	3.9032	3.9033	3.9033	3.9034	3.9034	3.9035	3.9035	3.9036
13 30	3.9036	3.9037	3.9037	3.9038	3.9038	3.9039	3.9040	3.9040	3.9041	3.9041
13 40	3.0042	3.9042	3.9043	3.9043	3.9044	3.9044	3.9045	3.9046	3.9046	3.9047
13 50	3.9047	3.9048	3.9048	3.9049	3.9049	3.9050	3.9050	3.9051	3.9051	3.9052
2 14 0	3.9053	3.9053	3.9054	3.9054	3.9055	3.9055	3.9056	3.9056	3.9057	3.9057
14 10	3.9058	3.9058	3.9059	3.9060	3.9060	3.9061	3.9061	3.9062	3.9062	3.9063
14 20	3.9063	3.9064	3.9064	3.9065	3.9066	3.9066	3.9067	3.9067	3.9068	3.9068
14 30	3.9069	3.9069	3.9070	3.9070	3.9071	3.9071	3.9072	3.9073	3.9073	3.9074
14 40	3.9074	3.9075	3.9075	3.9076	3.9076	3.9077	3.9077	3.9078	3.9078	3.9079
14 50	3.9079	3.9080	3.9081	3.9081	3.9082	3.9082	3.9083	3.9083	3.9084	3.9084
2 15 0	3.9085	3.9085	3.9086	3.9086	3.9087	3.9088	3.9088	3.9089	3.9089	3.9090
15 10	3.9090	3.9091	3.9091	3.9092	3.9092	3.9093	3.9093	3.9094	3.9094	3.9095
15 20	3.9096	3.9096	3.9097	3.9097	3.9098	3.9098	3.9099	3.9099	3.9100	3.9100
15 30	3.9101	3.9101	3.9102	3.9103	3.9103	3.9104	3.9104	3.9105	3.9105	3.9106
15 40	3.9106	3.9107	3.9107	3.9108	3.9108	3.9109	3.9109	3.9110	3.9111	3.9111
15 50	3.9112	3.9112	3.9113	3.9113	3.9114	3.9114	3.9115	3.9115	3.9116	3.9116
2 16 0	3.9117	3.9117	3.9118	3.9118	3.9119	3.9120	3.9120	3.9121	3.9121	3.9122
16 10	3.9122	3.9123	3.9123	3.9124	3.9124	3.9125	3.9125	3.9126	3.9126	3.9127
16 20	3.9128	3.9128	3.9129	3.9129	3.9130	3.9130	3.9131	3.9131	3.9132	3.9132
16 30	3.9133	3.9133	3.9134	3.9134	3.9135	3.9135	3.9136	3.9137	3.9137	3.9138
16 40	3.9138	3.9139	3.9139	3.9140	3.9140	3.9141	3.9141	3.9142	3.9142	3.9143
16 50	3.9143	3.9144	3.9144	3.9145	3.9146	3.9146	3.9147	3.9147	3.9148	3.9148
2 17 0	3.9149	3.9149	3.9150	3.9150	3.9151	3.9151	3.9152	3.9152	3.9153	3.9153
17 10	3.9154	3.9155	3.9155	3.9156	3.9156	3.9157	3.9157	3.9158	3.9158	3.9159
17 20	3.9159	3.9160	3.9160	3.9161	3.9161	3.9162	3.9162	3.9163	3.9163	3.9164
17 30	3.9165	3.9165	3.9166	3.9166	3.9167	3.9167	3.9168	3.9168	3.9169	3.9169
17 40	3.9170	3.9170	3.9171	3.9171	3.9172	3.9172	3.9173	3.9173	3.9174	3.9175
17 50	3.9175	3.9176	3.9176	3.9177	3.9177	3.9178	3.9178	3.9179	3.9179	3.9180
2 18 0	3.9180	3.9181	3.9181	3.9182	3.9182	3.9183	3.9183	3.9184	3.9184	3.9185
18 10	3.9186	3.9186	3.9187	3.9187	3.9188	3.9188	3.9189	3.9189	3.9190	3.9190
18 20	3.9191	3.9191	3.9192	3.9192	3.9193	3.9193	3.9194	3.9194	3.9195	3.9195
18 30	3.9196	3.9197	3.9197	3.9198	3.9198	3.9199	3.9199	3.9200	3.9200	3.9201
18 40	3.9201	3.9202	3.9202	3.9203	3.9203	3.9204	3.9204	3.9205	3.9205	3.9206
18 50	3.9206	3.9207	3.9207	3.9208	3.9209	3.9209	3.9210	3.9210	3.9211	3.9211
2 19 0	3.9212	3.9212	3.9213	3.9213	3.9214	3.9214	3.9215	3.9215	3.9216	3.9216
19 10	3.9217	3.9217	3.9218	3.9218	3.9219	3.9219	3.9220	3.9221	3.9221	3.9222
19 20	3.9222	3.9223	3.9223	3.9224	3.9224	3.9225	3.9225	3.9226	3.9236	3.9227
19 30	3.9227	3.9228	3.9228	3.9229	3.9229	3.9230	3.9230	3.9231	3.9231	3.9232
19 40	3.9232	3.9233	3.9233	3.9234	3.9235	3.9235	3.9236	3.9236	3.9237	3.9237
19 50	3.9238	3.9238	3.9239	3.9239	3.9240	3.9240	3.9241	3.9241	3.9242	3.9242

TABLE VII.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc. °	′	″	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
2h.	20m.	0s.	3.9243	3.9243	3.9244	3.9244	3.9245	3.9245	3.9246	3.9246	3.9247	3.9247
	20	10	3.9248	3.9248	3.9249	3.9250	3.9250	3.9251	3.9251	3.9252	3.9252	3.9253
	20	20	3.9253	3.9254	3.9254	3.9255	3.9255	3.9256	3.9256	3.9257	3.9257	3.9258
	20	30	3.9258	3.9259	3.9259	3.9260	3.9260	3.9261	3.9261	3.9262	3.9262	3.9263
	20	40	3.9263	3.9264	3.9264	3.9265	3.9265	3.9266	3.9267	3.9267	3.9268	3.9268
	20	50	3.9269	3.9269	3.9270	3.9270	3.9271	3.9271	3.9272	3.9272	3.9273	3.9273
2	21	0	3.9274	3.9274	3.9275	3.9275	3.9276	3.9276	3.9277	3.9277	3.9278	3.9278
	21	10	3.9279	3.9279	3.9280	3.9280	3.9281	3.9281	3.9282	3.9282	3.9283	3.9283
	21	20	3.9284	3.9284	3.9285	3.9285	3.9286	3.9287	3.9287	3.9288	3.9288	3.9289
	21	30	3.9289	3.9290	3.9290	3.9291	3.9291	3.9202	3.9292	3.9293	3.9293	3.9294
	21	40	3.9294	3.9295	3.9295	3.9296	3.9296	3.9297	3.9297	3.9298	3.9298	3.9299
	21	50	3.9299	3.9300	3.9300	3.9301	3.9301	3.9302	3.9302	3.9303	3.9303	3.9304
2	22	0	3.9304	3.9305	3.9305	3.9306	3.9306	3.9307	3.9307	3.9308	3.9308	3.9309
	22	10	3.9309	3.9310	3.9311	3.9311	3.9312	3.9312	3.9313	3.9313	3.9314	3.9314
	22	20	3.9315	3.9315	3.9316	3.9316	3.9317	3.9317	3.9318	3.9318	3.9319	3.9319
	22	30	3.9320	3.9320	3.9321	3.9321	3.9322	3.9322	3.9323	3.9323	3.9324	3.9324
	22	40	3.9325	3.9325	3.9326	3.9326	3.9327	3.9327	3.9328	3.9328	3.9329	3.9329
	22	50	3.9330	3.9330	3.9331	3.9331	3.9332	3.9332	3.9333	3.9333	3.9334	3.9334
2	23	0	3.9335	3.9335	3.9336	3.9336	3.9337	3.9337	3.9338	3.9338	3.9339	3.9339
	23	10	3.9340	3.9340	3.9341	3.9341	3.9342	3.9342	3.9343	3.9343	3.9344	3.9344
	23	20	3.9345	3.9345	3.9346	3.9346	3.9347	3.9348	3.9348	3.9349	3.9349	3.9350
	23	30	3.9350	3.9351	3.9351	3.9352	3.9352	3.9353	3.9353	3.9354	3.9354	3.9355
	23	40	3.9355	3.9356	3.9356	3.9357	3.9357	3.9358	3.9358	3.9359	3.9359	3.9360
	23	50	3.9360	3.9361	3.9361	3.9362	3.9362	3.9363	3.9363	3.9364	3.9364	3.9365
2	24	0	3.9365	3.9366	3.9366	3.9367	3.9367	3.9368	3.9368	3.9369	3.9369	3.9370
	24	10	3.9370	3.9371	3.9371	3.9372	3.9372	3.9373	3.9373	3.9374	3.9374	3.9375
	24	20	3.9375	3.9376	3.9376	3.9377	3.9377	3.9378	3.9378	3.9379	3.9379	3.9380
	24	30	3.9380	3.9381	3.9381	3.9382	3.9382	3.9383	3.9383	3.9384	3.9384	3.9385
	24	40	3.9385	3.9386	3.9386	3.9387	3.9387	3 9388	3.9388	3.9389	3.9389	3.9390
	24	50	3.9390	3.9391	3.9391	3.9392	3.9392	3.9393	3.9393	3.9394	3.9394	3.9395
2	25	0	3.9395	3.9396	3.9396	3.9397	3.9397	3.9398	3.9398	3.9399	3.9399	3.9400
	25	10	3.9400	3.9401	3.9401	3.9402	3.9402	3.9403	3.9403	3.9404	3.9404	3.9405
	25	20	3.9405	3.9406	3.9406	3.9407	3.9407	3.9408	3.9408	3.9409	3.9409	3.9410
	25	30	3.9410	3.9411	3.9411	3.9412	3.9412	3.9413	3.9413	3.9414	3.9414	3.9415
	25	40	3.9415	3.9416	3.9416	3.9417	3.9417	3.9418	3.9418	3.9419	3.9419	3.9420
	25	50	3.9420	3.9421	3.9421	3.9422	3.9422	3.9423	3.9423	3.9424	3.9424	3.9425
2	26	0	3.9425	3.9426	3.9426	3.9427	3.9427	3.9428	3.9428	3.9429	3.9429	3.9430
	26	10	3.9430	3.9430	3.9431	3.9431	3.9432	3.9432	3.9433	3.9433	3.9434	3.9434
	26	20	3.9435	3.9435	3.9436	3.9436	3.9437	3.9437	3.9438	3.9438	3.9439	3.9439
	26	30	3.9440	3.9440	3.9441	3.9441	3.9442	3.9442	3.9443	3.9443	3.9444	3.9444
	26	40	3.9445	3.9445	3.9446	3.9446	3.9447	3.9447	3.9448	3.9448	3.9449	3.9449
	26	50	3.9450	3.9450	3.9451	3.9451	3.9452	3.9452	3.9453	3.9453	3.9454	3.9454
2	27	0	3.9455	3.9455	3.9456	3.9456	3.9457	3.9457	3.9458	3.9458	3.9459	3.9459
	27	10	3.9460	3.9460	3.9461	3.9461	3.9462	3.9462	3.9463	3.9463	3.9464	3.9464
	27	20	3.9465	3.9465	3.9466	3.9466	3.9466	3.9467	3.9467	3.9468	3.9468	3.9469
	27	30	3.9469	3.9470	3.9470	3.9471	3.9471	3.9472	3.9472	3.9473	3.9473	3.9474
	27	40	3.9474	3.9475	3.9475	3.9476	3.9476	3.9477	3.9477	3.9478	3.9478	3.9479
	27	50	3.9479	3.9480	3.9480	3.9481	3.9481	3.9482	3.9482	3.9483	3.9483	3.9484
2	28	0	3.9484	3.9485	3.9485	3.9486	3.9486	3.9487	3.9487	3.9488	3.9488	3.9489
	28	10	3.9489	3.9490	3.9490	3.9490	3.9491	3.9491	3.9492	3.9492	3.9493	3.9493
	28	20	3.9494	3.9494	3.9495	3.9495	3.9496	3.9496	3.9497	3.9497	3.9498	3.9498
	28	30	3.9499	3.9499	3.9500	3.9500	3.9501	3.9501	3.9502	3.9502	3.9503	3.9503
	28	40	3.9504	3.9504	3.9505	3.9505	3.9506	3.9506	3.9507	3.9507	3.9508	3.9508
	28	50	3.9509	3.9509	3.9509	3.9510	3.9510	3.9511	3.9511	3.9512	3.9512	3.9513
2	29	0	3.9513	3.9514	3.9514	3.9515	3.9515	3.9516	3.9516	3.9517	3.9517	3.9518
	29	10	3.9518	3.9519	3.9519	3.9520	3.9520	3.9521	3.9521	3.9522	3.9522	3.9523
	29	20	3.9523	3.9524	3 9524	3.9525	3.9525	3.9526	3.9526	3.9526	3.9527	3.9527
	29	30	3.9528	3.9528	3.9529	3.9529	3.9530	3.9530	3.9531	3.9531	3.9532	3.9532
	29	40	3.9533	3.9533	3.9534	3.9534	3.9535	3.9535	3.9536	3.9536	3.9537	3.9537
	29	50	3.9538	3.9538	3.9539	3.9539	3.9540	3.9540	3.9540	3.9541	3.9541	3.9542

TABLE VII.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
2h.	30m.	0s.	3.9542	3.9543	3.9543	3.9544	3.9544	3.9545	3.9545	3.9546	3.9546	3.9547
	30	10	3.9547	3.9548	3.9548	3.9549	3.9549	3.9550	3.9550	3.9551	3.9551	3.9552
	30	20	3.9552	3.9553	3.9553	3.9554	3.9554	3.9554	3.9555	3.9555	3.9556	3.9556
	30	30	3.9557	3.9557	3.9558	3.9558	3.9559	3.9559	3.9560	3.9560	3.9561	3.9561
	30	40	3.9562	3.9562	3.9563	3.9563	3.9564	3.9564	3.9565	3.9565	3.9566	3.9566
	30	50	3.9566	3.9567	3.9567	3.9568	3.9568	3.9569	3.9569	3.9570	3.9570	3.9571
2	31	0	3.9571	3.9572	3.9572	3.9573	3.9573	3.9574	3.9574	3.9575	3.9575	3.9576
	31	10	3.9576	3.9577	3.9577	3.9578	3.9578	3.9578	3.9579	3.9579	3.9580	3.9580
	31	20	3.9581	3.9581	3.9582	3.9582	3.9583	3.9583	3.9584	3.9584	3.9585	3.9585
	31	30	3.9586	3.9586	3.9587	3.9587	3.9588	3.9588	3.9589	3.9589	3.9589	3.9590
	31	40	3.9590	3.9591	3.9591	3.9592	3.9592	3.9593	3.9593	3.9594	3.9594	3.9595
	31	50	3.9595	3.9596	3.9596	3.9597	3.9597	3.9598	3.9598	3.9599	3.9599	3.9599
2	32	0	3.9600	3.9600	3.9601	3.9601	3.9602	3.9602	3.9603	3.9603	3.9604	3.9604
	32	10	3.9605	3.9605	3.9606	3.9606	3.9607	3.9607	3.9608	3.9608	3.9609	3.9609
	32	20	3.9609	3.9610	3.9610	3.9611	3.9611	3.9612	3.9612	3.9613	3.9613	3.9614
	32	30	3.9614	3.9615	3.9615	3.9616	3.9616	3.9617	3.9617	3.9618	3.9618	3.9618
	32	40	3.9619	3.9619	3.9620	3.9620	3.9621	3.9621	3.9622	3.9622	3.9623	3.9623
	32	50	3.9624	3.9624	3.9625	3.9625	3.9626	3.9626	3.9627	3.9627	3.9627	3 9628
2	33	0	3.9628	3.9629	3.9629	3.9630	3.9630	3.9631	3.9631	3.9632	3.9632	3.9633
	33	10	3.9633	3.9634	3.9634	3.9635	3.9635	3.9636	3.9636	3.9636	3.9637	3.9637
	33	20	3.9638	3.9638	3.9639	3.9639	3.9640	3.9640	3.9641	3.9641	3.9642	3.9642
	33	30	3.9643	3.9643	3.9644	3.9644	3.9644	3.9645	3.9645	3.9646	3.9646	3.9647
	33	40	3.9647	3.9648	3.9648	3.9649	3.9649	3.9650	3.9650	3.9651	3.9651	3.9652
	33	50	3.9652	3.9652	3.9653	3.9653	3.9654	3.9654	3.9655	3.9655	3.9656	3.9656
2	34	0	3.9657	3.9657	3.9658	3.9658	3.9659	3.9659	3.9660	3.9660	3.9660	3.9661
	34	10	3.9661	3.9662	3.9662	3.9663	3.9663	3.9664	3.9664	3.9665	3.9665	3.9666
	34	20	3.9666	3.9667	3.9667	3.9668	3.9668	3.9668	3.9669	3.9669	3.9670	3.9670
	34	30	3.9671	3.9671	3.9672	3.9672	3.9673	3.9673	3.9674	3.9674	3.9674	3.9675
	34	40	3.9675	3.9676	3.9676	3.9677	3.9677	3.9678	3.9678	3.9679	3.9679	3.9680
	34	50	3.9680	3.9681	3.9681	3.9682	3.9682	3.9682	3.9683	3.9683	3.9684	3.9684
2	35	0	3.9685	3.9685	3.9686	3.9686	3.9687	3.9687	3.9688	3.9688	3.9689	3.9689
	35	10	3.9689	3.9690	3.9690	3.9691	3.9691	3.9692	3.9692	3.9693	3.9693	3.9694
	35	20	3.9694	3.9695	3.9695	3.9696	3.9696	3.9696	3.9697	3.9697	3.9698	3.9698
	35	30	3.9699	3.9699	3.9700	3.9700	3.9701	3.9701	3.9702	3.9702	3.9703	3.9703
	35	40	3.9703	3.9704	3.9704	3.9705	3.9705	3.9706	3.9706	3.9707	3.9707	3.9708
	35	50	3.9708	3.9709	3.9709	3.9710	3.9710	3.9710	3.9711	3.9711	3.9712	3.9712
2	36	0	3.9713	3.9713	3.9714	3.9714	3.9715	3.9715	3.9716	3.9716	3.9716	3.9717
	36	10	3.9717	3.9718	3.9718	3.9719	3.9719	3.9720	3.9720	3.9721	3.9721	3.9722
	36	20	3.9722	3.9722	3.9723	3.9723	3.9724	3.9724	3.9725	3.9725	3.9726	3.9726
	36	30	3.9727	3.9727	3.9728	3.9728	3.9729	3.9729	3.9729	3.9730	3.9730	3.9731
	36	40	3.9731	3.9732	3.9732	3.9733	3.9733	3.9734	3.9734	3.9735	3.9735	3.9735
	36	50	3.9736	3.9736	3.9737	3.9737	3.9738	3.9738	3.9739	3.9739	3.9740	3.9740
2	37	0	3.9741	3.9741	3.9741	3.9742	3.9742	3.9743	3.9743	3.9744	3.9744	3.9745
	37	10	3.9745	3.9746	3.9746	3.9746	3.9747	3.9747	3.9748	3.9748	3.9749	3.9749
	37	20	3.9750	3.9750	3.9751	3.9751	3.9752	3.9752	3.9752	3.9753	3.9753	3.9754
	37	30	3.9754	3.9755	3.9755	3.9756	3.9756	3.9757	3.9757	3.9758	3.9758	3 9758
	37	40	3.9759	3.9759	3.9760	3.9760	3.9761	3.9761	3.9762	3.9762	3.9763	3.9763
	37	50	3.9764	3.9764	3.9764	3.9765	3.9765	3.9766	3.9766	3.9767	3.9767	3.9768
2	38	0	3.9768	3.9769	3.9769	3.9769	3.9770	3.9770	3.9771	3.9771	3.9772	3.9772
	38	10	3.9773	3.9773	3.9774	3.9774	3.9774	3.9775	3.9775	3.9776	3.9776	3.9777
	38	20	3.9777	3.9778	3.9778	3.9779	3.9779	3.9780	3.9780	3.9780	3.9781	3.9781
	38	30	3.9782	3.9782	3.9783	3.9783	3.9784	3.9784	3.9785	3.9785	3.9785	3.9786
	38	40	3.9786	3.9787	3.9787	3.9788	3.9788	3.9789	3.9789	3.9790	3.9790	3.9790
	38	50	3.9791	3.9791	3.9792	3.9792	3.9793	3.9793	3.9794	3.9794	3.9795	3.9795
2	39	0	3.9795	3.9796	3.9796	3.9797	3.9797	3.9798	3.9798	3.9799	3.9799	3.9800
	39	10	3.9800	3.9800	3.9801	3.9801	3.9802	3.9802	3.9803	3.9803	3.9804	3.9804
	39	20	3.9805	3.9805	3.9805	3.9806	3.9806	3.9807	3.9807	3.9808	3.9808	3.9809
	39	30	3.9809	3.9810	3.9810	3.9810	3.9811	3.9811	3.9812	3.9812	3.9813	3.9813
	39	40	3.9814	3.9814	3.9815	3.9815	3.9815	3.9816	3.9816	3.9817	3.9817	3.9818
	39	50	3.9818	3.9819	3.9819	3.9820	3.9820	3.9820	3.9821	3.9821	3.9822	3.9822

TABLE VII.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
2h. 40′m. 0″s.	3.9823	3.9823	3.9824	3.9824	3.9825	3.9825	3.9825	3.9826	3.9826	3.9827
40 10	3.9827	3.9828	3.9828	3.9829	3.9829	3.9829	3.9830	3.9830	3.9831	3.9831
40 20	3.9832	3.9832	3.9833	3.9833	3.9834	3.9834	3.9834	3.9835	3.9835	3.9836
40 30	3.9836	3.9837	3.9837	3.9838	3.9838	3.9839	3.9830	3.9839	3.9840	3.9840
40 40	3.9841	3.9841	3.9842	3.9842	3.9843	3.9843	3.9848	3.9844	3.9844	3.9845
40 50	3.9845	3.9846	3.9846	3.9847	3.9847	3.9848	3.9848	3.9848	3.9849	3.9849
2 41 0	3.9850	3.9850	3.9851	3.9851	3.9852	3.9852	3.9852	3.9853	3.9853	3.9854
41 10	3.9854	3.9855	3.9855	3.9856	3.9856	3.9857	3.9857	3.9857	3.9858	3.9858
41 20	3.9859	3.9859	3.9860	3.9860	3.9861	3.9861	3.9861	3.9862	3.9862	3.9863
41 30	3.9863	3.9864	3.9864	3.9865	3.9865	3.9865	3.9866	3.9866	3.9867	3.9867
41 40	3.9868	3.9868	3.9869	3.9869	3.9870	3.9870	3.9870	3.9871	3.9871	3.9872
41 50	3.9872	3.9873	3.9873	3.9874	3.9874	3.9874	3.9875	3.9875	3.9876	3.9876
2 42 0	3.9877	3.9877	3.9878	3.9878	3.9878	3.9879	3.9879	3.9880	3.9880	3.9881
42 10	3.9881	3.9882	3.9882	3.9882	3.9883	3.9883	3.9884	3.9884	3.9885	3.9885
42 20	3.9886	3.9886	3.9886	3.9887	3.9887	3.9888	3.9888	3.9889	3.9889	3.9890
42 30	3.9890	3.9890	3.9891	3.9891	3.9892	3.9892	3.9893	3.9893	3.9894	3.9894
42 40	3.9894	3.9895	3.9895	3.9896	3.9896	3.9897	3.9897	3.9898	3.9898	3.9899
42 50	3.9899	3.9899	3.9900	3.9900	3.9901	3.9901	3.9902	3.9902	3.9903	3.9903
2 43 0	3.9903	3.9904	3.9904	3.9905	3.9905	3.9906	3.9906	3.9906	3.9907	3.9907
43 10	3.9908	3.9908	3.9909	3.9909	3.9910	3.9910	3.9910	3.9911	3.9911	3.9912
43 20	3.9912	3.9913	3.9913	3.9914	3.9914	3.9914	3.9915	3.9915	3.9916	3.9916
43 30	3.9917	3.9917	3.9918	3.9918	3.9918	3.9919	3.9919	3.9920	3.9920	3.9921
43 40	3.9921	3.9922	3.9922	3.9922	3.9923	3.9923	3.9924	3.9924	3.9925	3.9925
43 50	3.9926	3.9926	3.9926	3.9927	3.9927	3.9928	3.9928	3.9929	3.9929	3.9930
2 44 0	3.9930	3.9930	3.9931	3.9931	3.9932	3.9932	3.9933	3.9933	3.9933	3.9934
44 10	3.9934	3.9935	3.9935	3.9936	3.9936	3.9937	3.9937	3.9937	3.9938	3.9938
44 20	3.9939	3.9939	3.9940	3.9940	3.9941	3.9941	3.9941	3.9942	3.9942	3.9943
44 30	3.9943	3.9944	3.9944	3.9944	3.9945	3.9945	3.9946	3.9946	3.9947	3.9947
44 40	3.9948	3.9948	3.9948	3.9949	3.9949	3.9950	3.9950	3.9951	3.9951	3.9952
44 50	3.9952	3.9952	3.9953	3.9953	3.9954	3.9954	3.9955	3.9955	3.9955	3.9956
2 45 0	3.9956	3.9957	3.9957	3.9958	3.9958	3.9959	3.9959	3.9959	3.9960	3.9960
45 10	3.9961	3.9961	3.9962	3.9962	3.9962	3.9963	3.9963	3.9964	3.9964	3.9965
45 20	3.9965	3.9966	3.9966	3.9966	3.9967	3.9967	3.9968	3.9968	3.9969	3.9969
45 30	3.9969	3.9970	3.9970	3.9971	3.9971	3.9972	3.9972	3.9973	3.9973	3.9973
45 40	3.9974	3.9974	3.9975	3.9975	3.9976	3.9976	3.9976	3.9977	3.9977	3.9978
45 50	3.9978	3.9979	3.9979	3.9980	3.9980	3.9980	3.9981	3.9981	3.9982	3.9982
2 46 0	3.9983	3.9983	3.9983	3.9984	3.9984	3.9985	3.9985	3.9986	3.9986	3.9987
46 10	3.9987	3.9987	3.9988	3.9988	3.9989	3.9989	3.9990	3.9990	3.9990	3.9991
46 20	3.9991	3.9992	3.9992	3.9993	3.9993	3.9993	3.9994	3.9994	3.9995	3.9995
46 30	3.9996	3.9996	3.9997	3.9997	3.9997	3.9998	3.9998	3.9999	3.9999	4.0000
46 40	4.0000	4.0000	4.0001	4.0001	4.0002	4.0002	4.0003	4.0003	4.0003	4.0004
46 50	4.0004	4.0005	4.0005	4.0006	4.0006	4.0007	4.0007	4.0007	4.0008	4.0008
2 47 0	4.0009	4.0009	4.0010	4.0010	4.0010	4.0011	4.0011	4.0012	4.0012	4.0013
47 10	4.0013	4.0013	4.0014	4.0014	4.0015	4.0015	4.0016	4.0016	4.0016	4.0017
47 20	4.0017	4.0018	4.0018	4.0019	4.0019	4.0019	4.0020	4.0020	4.0021	4.0021
47 30	4.0022	4.0022	4.0023	4.0023	4.0023	4.0024	4.0024	4.0025	4.0025	4.0026
47 40	4.0026	4.0026	4.0027	4.0027	4.0028	4.0028	4.0029	4.0029	4.0029	4.0030
47 50	4.0030	4.0031	4.0031	4.0032	4.0032	4.0032	4.0033	4.0033	4.0034	4.0034
2 48 0	4.0035	4.0035	4.0035	4.0036	4.0036	4.0037	4.0037	4.0038	4.0038	4.0038
48 10	4.0039	4.0039	4.0040	4.0040	4.0041	4.0041	4.0041	4.0042	4.0042	4.0043
48 20	4.0043	4.0044	4.0044	4.0045	4.0045	4.0045	4.0046	4.0046	4.0047	4.0047
48 30	4.0048	4.0048	4.0048	4.0049	4.0049	4.0050	4.0050	4.0051	4.0051	4.0051
48 40	4.0052	4.0052	4.0053	4.0053	4.0054	4.0054	4.0054	4.0055	4.0055	4.0056
48 50	4.0056	4.0057	4.0057	4.0057	4.0058	4.0058	4.0059	4.0059	4.0060	4.0060
2 49 0	4.0060	4.0061	4.0061	4.0062	4.0062	4.0063	4.0063	4.0063	4.0064	4.0064
49 10	4.0065	4.0065	4.0066	4.0066	4.0066	4.0067	4.0067	4.0068	4.0068	4.0069
49 20	4.0069	4.0069	4.0070	4.0070	4.0071	4.0071	4.0072	4.0072	4.0072	4.0073
49 30	4.0073	4.0074	4.0074	4.0074	4.0075	4.0075	4.0076	4.0076	4.0077	4.0077
49 40	4.0077	4.0078	4.0078	4.0079	4.0079	4.0080	4.0080	4.0080	4.0081	4.0081
49 50	4.0082	4.0082	4.0083	4.0083	4.0083	4.0084	4.0084	4.0085	4.0085	4.0086

TABLE VII.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
2h. 50m. 0s.	4.0086	4.0086	4.0087	4.0087	4.0088	4.0088	4.0089	4.0089	4.0089	4.0090
50 10	4.0090	4.0091	4.0091	4.0092	4.0092	4.0092	4.0093	4.0093	4.0094	4.0094
50 20	4.0095	4.0095	4.0095	4.0096	4.0096	4.0097	4.0097	4.0097	4.0098	4.0098
50 30	4.0099	4.0099	4.0100	4.0100	4.0100	4.0101	4.0101	4.0102	4.0102	4.0103
50 40	4.0103	4.0103	4.0104	4.0104	4.0105	4.0105	4.0106	4.0106	4.0106	4.0107
50 50	4.0107	4.0108	4.0108	4.0109	4.0109	4.0109	4.0110	4.0110	4.0111	4.0111
2 51 0	4.0111	4.0112	4.0112	4.0113	4.0113	4.0114	4.0114	4.0114	4.0115	4.0115
51 10	4.0116	4.0116	4.0117	4.0117	4.0117	4.0118	4.0118	4.0119	4.0119	4.0120
51 20	4.0120	4.0120	4.0121	4.0121	4.0122	4.0122	4.0122	4.0123	4.0123	4.0124
51 30	4.0124	4.0125	4.0125	4.0125	4.0126	4.0126	4.0127	4.0127	4.0128	4.0128
51 40	4.0128	4.0129	4.0129	4.0130	4.0130	4.0130	4.0131	4.0131	4.0132	4.0132
51 50	4.0133	4.0133	4.0133	4.0134	4.0134	4.0135	4.0135	4.0136	4.0136	4.0136
2 52 0	4.0137	4.0137	4.0138	4.0138	4.0138	4.0139	4.0139	4.0140	4.0140	4.0141
52 10	4.0141	4.0141	4.0142	4.0142	4.0143	4.0143	4.0144	4.0144	4.0144	4.0145
52 20	4.0145	4.0146	4.0146	4.0146	4.0147	4.0147	4.0148	4.0148	4.0149	4.0149
52 30	4.0149	4.0150	4.0150	4.0151	4.0151	4.0152	4.0152	4.0152	4.0153	4.0153
52 40	4.0154	4.0154	4.0154	4.0155	4.0155	4.0156	4.0156	4.0157	4.0157	4.0157
52 50	4.0158	4.0158	4.0159	4.0159	4.0159	4.0160	4.0160	4.0161	4.0161	4.0162
2 53 0	4.0162	4.0162	4.0163	4.0163	4.0164	4.0164	4.0164	4.0165	4.0165	4.0166
53 10	4.0166	4.0167	4.0167	4.0167	4.0168	4.0168	4.0169	4.0169	4.0169	4.0170
53 20	4.0170	4.0171	4.0171	4.0172	4.0172	4.0172	4.0173	4.0173	4.0174	4.0174
53 30	4.0175	4.0175	4.0175	4.0176	4.0176	4.0177	4.0177	4.0177	4.0178	4.0178
53 40	4.0179	4.0179	4.0180	4.0180	4.0180	4.0181	4.0181	4.0182	4.0182	4.0182
53 50	4.0183	4.0183	4.0184	4.0184	4.0185	4.0185	4.0185	4.0186	4.0186	4.0187
2 54 0	4.0187	4.0187	4.0188	4.0188	4.0189	4.0189	4.0190	4.0190	4.0190	4.0191
54 10	4.0191	4.0192	4.0192	4.0192	4.0193	4.0193	4.0194	4.0194	4.0194	4.0195
54 20	4.0195	4.0196	4.0196	4.0197	4.0197	4.0197	4.0198	4.0198	4.0199	4.0199
54 30	4.0199	4.0200	4.0200	4.0201	4.0201	4.0202	4.0202	4.0202	4.0203	4.0203
54 40	4.0204	4.0204	4.0204	4.0205	4 0205	4.0206	4.0206	4.0207	4.0207	4.0207
54 50	4.0208	4.0208	4.0209	4.0209	4.0209	4.0210	4.0210	4.0211	4.0211	4.0211
2 55 0	4.0212	4.0212	4.0213	4.0213	4 0214	4.0214	4.0214	4.0215	4.0215	4.0216
55 10	4.0216	4.0216	4.0217	4.0217	4.0218	4.0218	4.0219	4.0219	4.0219	4.0220
55 20	4.0220	4.0221	4.0221	4.0221	4.0222	4.0222	4.0223	4.0223	4.0223	4.0224
55 30	4.0224	4.0225	4.0225	4.0226	4.0226	4.0226	4.0227	4.0227	4.0228	4.0228
55 40	4.0228	4.0229	4.0229	4.0230	4.0230	4.0230	4.0231	4.0231	4.0232	4.0232
55 50	4.0233	4.0233	4.0233	4.0234	4.0234	4.0235	4.0235	4.0235	4.0236	4.0236
2 56 0	4.0237	4.0237	4.0237	4.0238	4.0238	4.0239	4.0239	4.0240	4.0240	4.0240
56 10	4.0241	4.0241	4.0242	4.0242	4.0242	4.0243	4.0243	4.0244	4.0244	4.0244
56 20	4.0245	4.0245	4.0246	4.0246	4.0246	4.0247	4.0247	4.0248	4.0248	4.0249
56 30	4.0249	4.0249	4.0250	4.0250	4.0251	4.0251	4.0251	4.0252	4.0252	4.0253
56 40	4.0253	4.0253	4.0254	4.0254	4.0255	4.0255	4.0256	4.0256	4.0256	4.0257
56 50	4.0257	4.0258	4.0258	4.0258	4.0259	4.0259	4.0260	4.0260	4.0260	4.0261
2 57 0	4.0261	4.0262	4.0262	4.0262	4.0263	4.0263	4.0264	4.0264	4.0265	4.0265
57 10	4.0265	4.0266	4.0266	4.0267	4.0267	4.0267	4.0268	4.0268	4.0269	4.0269
57 20	4.0269	4.0270	4.0270	4.0271	4.0271	4.0271	4.0272	4.0272	4.0273	4.0273
57 30	4.0273	4.0274	4.0274	4.0275	4.0275	4.0276	4.0276	4.0276	4.0277	4.0277
57 40	4.0278	4.0278	4.0278	4.0279	4.0279	4.0280	4.0280	4.0280	4.0281	4.0281
57 50	4.0282	4.0282	4.0282	4.0283	4.0283	4.0284	4.0284	4.0284	4.0285	4.0285
2 58 0	4.0286	4.0286	4.0287	4.0287	4.0287	4.0288	4.0288	4.0289	4.0289	4.0289
58 10	4.0290	4.0290	4.0291	4.0291	4.0291	4.0292	4.0292	4.0293	4.0293	4.0293
58 20	4.0294	4.0294	4.0295	4.0295	4.0295	4.0296	4.0296	4.0297	4.0297	4.0297
58 30	4.0298	4.0298	4.0299	4.0299	4.0300	4.0300	4.0300	4.0301	4.0301	4.0302
58 40	4.0302	4.0302	4.0303	4.0303	4.0304	4.0304	4.0304	4.0305	4.0305	4.0306
58 50	4.0306	4.0306	4.0307	4.0307	4.0308	4.0308	4.0308	4.0309	4.0309	4.0310
2 59 0	4.0310	4.0310	4.0311	4.0311	4.0312	4.0312	4.0312	4.0313	4.0313	4.0314
59 10	4.0314	4.0314	4.031[illegible]	4.0315	4.0316	4.0316	4.0317	4.0317	4.0317	4.0318
59 20	4.0318	4.0319	4.0319	4.0319	4.0320	4.0320	4.0321	4.0321	4.0321	4.0322
59 30	4.0322	4.0323	4.0323	4.0323	4.0324	4.0324	4.0325	4.0325	4.0325	4.0326
59 40	4.0326	4.0327	4.0327	4.0327	4.0328	4.0328	4.0329	4.0329	4.0329	4.0330
59 50	4.0330	4.0331	4.0331	4.0331	4.0332	4.0332	4.0333	4.0333	4.0333	4.0334

EXPLANATION AND USE OF TABLE VII.

This table differs from the common table of logarithms only in having the argument expressed in degrees, (or hours,) minutes, and seconds, instead of common numbers. For example, the logarithm of 2° 38′ 33″ in this table is 3.9783, which in the common table is the logarithm of 9513, the number of seconds in 2° 38′ 33″. Thus, where sexigesimal numbers are used, it avoids the necessity of reducing them to seconds, or of reducing seconds to degrees, (or hours,) minutes, and seconds.

It can be used in all cases where proportional logarithms are now employed, while it is more generally and directly applicable, and avoids some of the inconveniences of the latter table. An example in lunar distances is given on page 260, where the only change in operation is the substitution of an addition for a subtraction.

The following example, from BOWDITCH'S NAVIGATOR, page 244, illustrates two modes of substitution,—by using the arithmetical complement of the logarithm; or by employing the reciprocal functions, i. e. the cosecant for sine, secant for cosine, tangent for cotangent, and the reverse.

Bowd. Nav., page 244.				1st method.		2d method.	
2d angle	121° 6′	l. tan	10.2195	l. tan	0.2195	l. cot	9.7805
☽ app. alt.	34° 55′	l. cot	10.1561	l. cot	0.1561	l. tan	9.8439
Corr. ☽ alt.	44′ 5″	P. L.	0.6110	ar. comp. log	6.5776	log	3.4224
2d Corr.	18′ 34″	P. L.	0.9866	ar. comp. log	6.9532	log	3.0468

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